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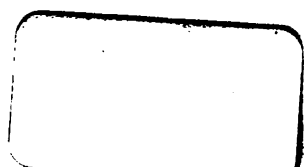
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THE
ELECTRICAL CONDUCTIVITY
AND
IONIZATION CONSTANTS
OF
ORGANIC COMPOUNDS

A bibliography of the periodical literature from 1889 to 1910 inclusive, including all important work before 1889 and corrected to the beginning of 1913. Giving numerical data for the ionization constants at all temperatures at which they have been measured; and some numerical data of the electrical conductivity

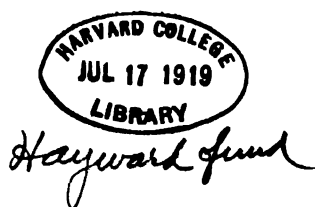
BY

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Member of the American Chemical Society, the American Electrochemical Society, etc.

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ERRATA

- Page 52. *pseudo*-Acetylpyrrolecarboxylic acid. Change the cross reference to 2-Methylpyrrolketone-5-carboxylic acid.
- Page 54. Adipic acid; line 7. Close the parenthesis after (1024 .
- Page 59. *p*-Aminobenzoic acid ethyl ester. There should be no period between the end of the first formula and the equality sign.
- Page 89. Butyl cyanide. The cross reference should begin with a capital V.
- Page 108. Cobalt. Add 1126 at the end of line 7.
- Page 150. Dithiolcarboxylic acid. The cross reference should read Dithio-carbondiglycollic acid.
- Page 167. Gliadin. Insert 145b before 2005.
- Page 170. Guanidine. The reference number is 1775, not 1175.
- Page 200. 2-Methoxy-3,5-dichloro-benzoic acid. The synonym in parentheses should read Methyl-dichloro-salicylic acid.
- Page 239. *p*-Orsellic acid. The synonym in parentheses should read *p*-, not *p*..
- Oxaldihydroxamic acid; last line. The number 756 should be in bold-face type, as a reference number.
- Page 246. Phenaceturic acid. The synonym in parentheses should read Phenylaceturic acid.
- Page 257. Phosphorus; middle of line 6 should read sulphide, not oxide.
- Page 261. Platinum; last line. Insert 1417 before 1466.
- Page 285. Tellurium; line 2. The first word should read hydroxide, not chloride.
- Page 360. $C_8H_{10}ON_2$. There should be a hyphen in the first name, between N and phenyl.
- Page 429. 557. The date should read 1890, not 1980.
- Page 530. 1915; last line. The bracket should be closed after 1929.

NOTE. The cross references for substituted amides on pages 74, 79, 92, 132, 192 and 319 lead to the unsubstituted amide. Following this will be found the substituted amides.

EXPLANATION.

INTRODUCTORY.

THE *object* of this book is to present, as far as lies in my power, a bibliography of all the measurements of the ionization constants and the electrical conductivity of organic compounds that have appeared in the periodical literature between the years 1889 and 1910 inclusive, together with the values of the ionization constants, and certain values of the electrical conductivity measurements. Qualitative work is also included. Before the year 1889, little work of value at the present time was published. All that is of value is included here. From 1910 to the beginning of 1913, important corrections that have come to my notice have been inserted. Beginning with 1910, full data of the entire periodical literature are published in the *Tables Annuelles Internationales de Constantes et Données Numériques*.

Exceptions. The references to subjects chiefly of biological interest, as albumin, blood, sap, etc., are complete only for the last few years (roughly the last five or ten), but afford a means both of knowing where to get at the important work, which is all recent, and where to start in any more thorough search of the literature.

The references to the resistance of substances such as rubber, wood, etc., have not been looked up. They are of value almost exclusively in connection with the question of electrical insulation. A few are given. There is a biological interest in some cases.

The fact that the references to the literature of any compound or substance are not complete, is stated in the tables immediately after the name.

References to the conductivity of inorganic compounds in organic solvents have not been looked up specially, though in cases where salt formation is to be expected they have been taken. When given, they will be found under the head of miscellaneous measurements, either separately from the references to organic compounds, or distinguished from them by being placed in parenthesis. A few pages farther on, in the detailed description of miscellaneous measurements, will be given certain considerations of the question of combination of solvent and solute in making new compounds.

Additions. In the author list are given some articles which contain only measurements of inorganic compounds, or matter which is theoretical. Such references are inclosed in parenthesis to distinguish them, both in the author list and wherever else they may be used. The object of including them is to save time to persons who are interested only in original measurements of organic compounds. Experimental work in connection with theoretical considerations of dissociation and of electrical conductivity is almost invariably first carried on with inorganic compounds. Later work often refers to organic compounds for the sake of analogy, clearness or additional proof. In consequence of this, references are often met with, which are apparently to original work on organic compounds, when as a matter of fact the original article contains only quotations of experimental work on organic compounds, while the new experimental work is entirely on inorganic compounds.

In the case of work on the conductivity of molten salts, which is quite recent, I have inserted a number of references to work on inorganic compounds, because experience has shown that these articles will be referred to, as soon as similar work on organic compounds becomes common.

In the tables, a number of references are given to work on the comparative strength of different compounds (measured in various ways), because to many chemists the chief value of the ionization constant of a compound, or of a measurement of its electrical conductivity, is to determine its strength as an acid or a base. When no quantitative data are available, qualitative data may be quite useful. Negative results, as the fact that a compound has no appreciable conductivity in hydrochloric acid, may be of use in determining the nature of a compound or as a guide for subsequent investigation.

The statements in the tables always indicate when the work is of a qualitative nature, or when negative results have been obtained.

A few measurements of inorganic compounds have been inserted for purposes of comparison.

Method of search of the literature. Seventy-eight of the journals and about five thousand dissertations have been examined page by page; the other journals have been examined by index and table of contents, with page by page examination of articles that might contain information. The titles of articles usually give no indications of value, so omissions are to be expected. The omissions are most likely to occur in the case of measurements of the conductivity of salts, since these are frequently inserted very briefly, with no special mention of them in the text.

ARRANGEMENT.

The book is *divided into* a set of tables arranged according to the names of the compounds, containing all the data that may be given, with a bibliography of all the references to each compound; a formula index to the compounds; a bibliography arranged according to the names of authors; a subject index to certain subjects; and a journal list giving the names of all journals examined with the number and date of the last volume examined.

Order. Alphabetical order is used as a rule, but where the numerical order is more natural (as in the case of mono- and di-, etc. compounds) that is used. With a few exceptions, due chiefly to recent practice, and the necessity of selecting a definite form or name in cases of dispute, Beilstein's *Organische Chemie* (3d edition), Richter's *Lexikon der Kohlenstoff-Verbindungen* and the *International Catalogue of Scientific Literature*, have been used as guides and authorities. While I do not approve of a number of details in any one of these publications, it is obvious that if there is no yielding of personal prejudice all attempts at general uniformity will fail. Some inconsistencies in names and formulae are due to the fact that no one authority can be followed throughout.

In cases where more recent work has decided the composition or structure of a compound, such work has been accepted. It must always be remembered that the latest work on any subject is not necessarily the best, even when the newest theories and apparatus have been used.

DETAILED DESCRIPTION OF THE DIVISIONS.

TABLES.

Arrangement of the Compounds.

While the arrangement of the compounds in the tables is alphabetical, in order to bring together certain closely related compounds some exceptions are necessary, which are chiefly the use of customary names of isomers and of positions. Ortho-, meta- and para- compounds are placed in the usual order. Iso-, allo-, etc. compounds are placed after the normal compound, the prefixes (which are in italics) not being considered at all. The numerical order is followed in the case of mono-, di-, etc., derivatives of polybasic compounds. Immediately after each acid are given the amides, the anhydride and then the esters. On account of the small number of

compounds and the system of nomenclature used, there is little actual displacement due to these exceptions. Thus, *iso*-butyl alcohol comes immediately after *norm*-butyl alcohol, while *iso*-butyric acid follows butyric acid, but on account of the intervention of the butyric acid amides and esters it comes immediately after butyric acid propyl ester. The few other exceptions will be found by means of the cross references. In the case of the substituted amides there is an important exception discovered too late for correction. When an anilino or toluidino radical is substituted for a hydrogen atom in the NH_2 group, the compound is not mentioned at all under the head of the amides. Thus, acetanilide is not mentioned as acetic acid phenyl amide, nor is oxanilic acid mentioned as oxalic acid mono phenyl mono amide.

Nomenclature.

When an alphabetical arrangement is used, the place of any compound will vary according to the judgment used in the selection of the name, as in the case of methoxy-benzoic acid instead of hydroxy-benzoic acid methyl ether, and also according to the way in which a compound is regarded, as in the case of oxanilic acid which may be regarded as an amide.

In the tables, when the choice lies between a common name and a systematic name, as gallic acid or trihydroxy-benzoic acid, most compounds with very familiar names are given under the common name, since few chemists except those working with organic compounds are able to remember the structure of the higher organic compounds. This use of common names has the disadvantage of separating isomers. The use of systematic names has two chief disadvantages. It requires a knowledge of structure. Apart from the difficulty of remembering the structure of a number of compounds, our ideas of structure are constantly changing with increased knowledge. In the second place, there is no fixed use of systematic names. On the other hand, any consistent use of systematic names will bring together isomers, and sometimes closely related compounds; and the name will furnish some knowledge of the structure.

Cross references are in general given only to the parent compound and not to the substituted compound. Thus, nitroterephthalic acid is not given (though a nitro-*p*-phthalic acid is in the tables), because under terephthalic acid is given the cross reference to *p*-phthalic acid. The formula index shows at once the name used in the tables.

The names and the formulae of *dyes* are given as accurately as is possible under the circumstances, but any information concerning them must be used with caution. In most articles, on account of

the totally inadequate description given, and the ambiguous use of words, it is impossible to tell exactly what compound was used for measurement. Most commercial dyes are mixtures of compounds. If we assume that for any measurement the chief constituent of such a mixture has been isolated and purified, and is called in the article the pure dye, the structure may be in doubt, since different makers give the same name to dyes of different structure. Then in the case of the greater number of dyes, which are salts, it is quite impossible to tell which salt was the dye in question. There is some difference between the conductivity of a sodium and a potassium salt, or between that of a hydrochloride, a sulphate and an acetate; yet as a rule, the descriptions do not state the particular salt which was used. In most cases, the statement that the pure dye base was used is misleading, for the statement really means that a salt of one compound was used, and not the salts of several compounds mixed — though as just mentioned, it is usually impossible to tell what the salt was. The same confusion of terms also exists in reference to the acid or base of a dye, here again a salt really being meant, and not an acid or a base.

Hyphens and spaces are used to indicate particular groups, to avoid as far as possible the necessity of referring to the formulae.

Numbers, letters and abbreviations used to indicate position are placed directly in front of the group or element which they affect. In a few cases, the termination of the name shows the character of the group, as "one" for the keto group in pyrazolone. In these cases the number follows in parenthesis.

In the *numbering of substituted cyclic compounds*, the first substituted group is always given the number one. Thus, in the substituted benzoic acids, the carboxyl group is one; in the substituted anilines the amino group is one. In the toluic acids, the methyl group is one; but if they were regarded as methyl benzoic acids (derivatives of benzoic acid), the carboxyl group would be number one, and the number of the methyl group would vary according to the acid.

The *abbreviations* C, N and O (used instead of numbers) show that the substituting group is attached to the corresponding carbon, nitrogen or oxygen atom. Bz, shows substitution in the benzene ring; Py, in the pyridine ring. *Carboxylic*, in the name of an acid, shows the group COOH. For ambiguities in the use of the word *hydro*, see the following paragraph. The word *nor*, as in noropianic acid, shows that there is an unsubstituted compound, of which the substituted derivative (including esters and ethers as substituted compounds for the purpose of the present definition) has first been known, and named by the name which would naturally belong to

the unsubstituted compound. In this case, opianic acid is the dimethoxy acid, noropianic acid is the dihydroxy acid. The word *oxy* means only oxygen, hydroxy being used to show the hydroxyl group OH. The word *sulphinic* shows the group HSO_2 . The word *sulpho* (as in sulphobenzoic acid) or *sulphonic*, shows the group HSO_3 . The word *sulphone*, as in sulphonedi-acetic acid, shows the group SO_2 .

Differences in nomenclature causing confusion. In comparing the name of a compound described in an article in a journal, with the name used in other articles, or in standard works as those of Beilstein and of Richter, or with the name in these tables, a number of differences in usage will be found, which may lead to error. It seems advisable to explain a few of the most common of these, which have caused a number of mistakes.

In the case of compounds containing sulphur, there is so much variation in nomenclature, that the formula should always be examined. Most chemists use sulphinic, sulpho, sulphone and sulphononic, in the manner described in the preceding paragraph as used in these tables. The word *thio*, is used to show the replacement of any element by sulphur, or in making a name for a sulphur compound which is analogous to any non-sulphur compound. Thus, a thioacetic acid may be CH_3COSH , or CH_3CSSH , or CHS.COOH .

There is much ambiguity in naming compounds containing a substituting group. Methyl-salicylic acid may mean methoxy-benzoic acid, or it may mean hydroxy-toluic acid, depending on whether substitution is in the hydroxyl group or in the benzene ring. Cyanoacetamide may mean cyanoacetic acid amide, or acetic acid cyanoamide. It is sometimes impossible to tell what compound is meant in cases such as these, unless the context supplies some means of identification. There is a certain amount of error in statements concerning the measurements of organic acids by Ostwald, published in 1889 (less than twenty-five years ago), simply from this sort of confusion of names.

There is the same possibility of confusion, when the place of the substituting group is indicated in the name by a number or a letter. Thus, acridine in Beilstein has the nitrogen numbered 10, placed between carbons numbered 4 and 5. In Richter's *Lexikon* the nitrogen is also numbered 10, but is placed between carbons numbered 1 and 9. In journal articles the starting point of the numbering varies, and the direction of the numbering, as in the direction of the hands of a watch or the reverse. This last variation of direction while of minor importance, is apt to create confusion when isomers which are mirror images are concerned.

The word "*hydro*" is used in a most confusing manner. Thus, pyrrole is $\text{C}_4\text{H}_5\text{N}$. Tetrahydro-pyrrole (pyrrolidine) is naturally

C_4H_5N ; yet it may be called hydro-pyrrole. In the same way in the case of other compounds, the dihydro- or hexahydro- compound of one man will be the hydro- compound of another. Furthermore, when substituting groups are present, the word hydro may be used to show the theoretical addition of hydrogen with subsequent substitution of two atoms of hydrogen at that point. Thus, imideazole is $C_3H_4N_2$. Parabanic acid, $C_3H_2O_3N_2$, is called triketo-tetrahydro-imideazole, though only two hydrogen atoms are present. In this case, four hydrogen atoms are supposed to be added; then, in the three CH_2 groups, hydrogen is replaced by oxygen giving three CO or keto groups, leaving the fourth hydrogen attached to a nitrogen atom. This use of hydro is of convenience when type formulae are used, instead of printing formulae in the text, and is employed in Richter's Lexikon.

Details of the arrangement under each compound.

In order to aid identification or to show the purity of a compound for which any numerical data are given, the melting-point or boiling-point is given in the tables when it is stated in an article. This melting-point or boiling-point refers to the sample measured, and not necessarily to the most highly purified sample described in the article. In some cases the melting-point or boiling-point of a derivative (as a salt) may be given, when the article does not furnish such data for the pure compound. The position of these identifying data is directly after the ionization constant, or after the measurement of the conductivity. In many cases, where the original supplies no such data, I have looked up the mode of preparation, in order to make sure what the compound is. There is a good deal of reasonable doubt as to the position of substituted groups in a number of compounds, for instance in the toluidine sulphonic acids.

Immediately after the name, are given (in parenthesis) the synonyms. These are inserted in some cases only for convenience in referring to the original articles, since the names used there have been abandoned. After the synonyms, comes the empirical formula, and when convenient the extended formula. Cyclic formulae are given only in the grouping on the pages directly in front of the tables. The extended formulae are intended to be of assistance, but not to represent the definitive structure, nor to exclude the possibility of tautomeric forms, floating double bonds, etc.

The bibliographical references for each compound are arranged under definite headings which are not specifically named in the text. These headings are; (1) the specific conductivity of the pure compound; (2) the ionization constant; (3) the conductivity in aqueous

solution; (4) the conductivity in solvents other than water; (5) miscellaneous measurements, as the conductivity of mixtures with other compounds, conductivity under varying pressure, etc.; (6) the conductivity of the salts.

In general, a reference with no explanation is either to the conductivity in aqueous solution, or to the measurement of the ionization constant.

With the exception of old values of specific conductivity, which have been changed to make them correspond to the modern values, all data are given in the tables as in the original articles, rounding off decimals to tenths — a change that is actually of slight importance, since few of the measurements justify the use of the hundredths place. Values given in Siemens or mercury unit * have not been calculated to the corresponding values in reciprocal ohms for reasons which will be given later.

Under each heading are given all the references in the bibliography bearing on that subject. These references are given as numbers in bold face type, corresponding to the numbers in the author list. Duplicate references, that is, references to publication of the same measurement in more than one journal, are not given in the tables. They may be found by means of the author list, in which all such duplications are given, the fact being noted after the title of the article. Thus, under the heading of the ionization constant of butyric acid at 25°, is given number **180**. The author list shows that this is an article by Billitzer in the *Monatshefte für Chemie*. After the title is the statement in brackets, "[same as 183]", showing that the same measurement will be found in **183**, which is an article published in the *Sitzungsberichte der kaiserlichen Akademie der Wissenschaften* (Wien). Either article gives the original measurement. In these cases of duplication, the reference number used in the tables is to the article in the most readily accessible journal.

While as far as possible, no references to repetitions of the same measurement in different articles are given in the tables, it is impossible to avoid this altogether. Some of the measurements, in an article containing a number of measurements, may have been made by a person whose name is not mentioned. This person may afterward publish these measurements in an article under his own name, with no mention of the fact that they have already appeared in print. Such cases have come to my notice. References to new measurements of the same compound or to measurements of different preparations of the same compound, by the same observer, are given because they tend to establish the accuracy of the first value.

* The customary usage of regarding this as a unit of conductivity is followed, instead of speaking of it as the reciprocal of the unit of resistance.

When there is any advantage in one article, either from its greater accuracy, or from its more extended measurements, that reference number is placed first. In other cases the reference numbers are given in numerical order, though of course the number of an article from which any data are taken is placed directly after such data, followed by the numbers of the other articles. If the ionization constants or conductivity measurements in two articles are widely different, both are usually given, placing first the more reliable, and stating any possible explanation of such difference. But if the data in one article are evidently inaccurate, they are not given, though the reference number of that article is given. When there may be doubt from the name alone, what compound is referred to, greater weight is usually given to articles containing some means of determining what compound was really measured, and how pure it was. In the case of isomers, when no identifying statements, such as melting-point, mode of preparation, etc., are made in an article, I have assumed that the most easily prepared or procured isomer was used.

For all statements enclosed in brackets, I am responsible.

Detailed description of the headings under each compound.

1. *Specific conductivity.* As is customary, the old values are multiplied by 10^4 to make them comparable to the modern.

The generalization that the specific conductivity of a compound is a safe guide to its purity (the purest sample having the lowest conductivity), is incorrect. It seems probable that the character of the impurity has a considerable influence, and that the closer it is in structure to the compound to be purified, the more difficult it is to detect very small amounts by the fall in conductivity. It is also probable that there is some actual effect of solute on solvent in many cases. Turner 1766, finds that conductivity alone is not a sure indication of the amount of water in ethyl alcohol containing very small amounts of water. Fousserau 597, and Walden 1843, 1844, hold to the opposite view. Dutoit, Rapoport 491, find that the conductivity gives no absolute indication of the presence of very small amounts of impurity. See also 456, 1223, 1368 and 1389 in this connection.

2. *Ionization constant.* The ionization constant, k , is calculated from electrical conductivity measurements by the formula $k = \frac{(a)^2}{(1-a)v}$.

In this, v is the volume in liters in which is dissolved one equivalent weight in grams of the compound, and a , is the degree of dissociation measured by $\frac{\Delta(v)}{\Delta(\infty)}$. Text books must be consulted for a treatment

of the inaccuracy of this formula in the case of bases, stronger acids, and polybasic acids in which the influence of the second hydrogen ion is felt at moderate dilutions; and also for the calculation of the constant by other means, as the hydrolysis of salts, etc. See also the Subject Index under the headings, Dilution Law, and Ionization Constant, for articles on the subject. The earlier authors follow Ostwald in expressing the value in decimals, and using a constant one hundred times $k = K$, to avoid unnecessary ciphers. In the tables the true constant k is used, expressed in powers of 10; thus, for acetic acid at 25° , $k \times 10^5 = 1.86$.

It is given for each temperature at which it was measured, with an abbreviated explanation of the method used for its determination, if this was not by the direct measurement of the electrical conductivity of an aqueous solution of an acid or a base. When the value is greater than 10^{-7} , the value found by direct measurement of the electrical conductivity is generally chosen. When it is less than 10^{-7} , a value determined in some other way, by hydrolysis, etc., is given when possible; though in certain cases the value found by electrical conductivity is also given for the purpose of comparison with similar compounds, for which no method of measurement other than the electrical has been used.

In the case of measurements by the conductivity method, the fact that the specific conductivity of the water of solution has not been subtracted in calculating the value of the constant is noted by the abbreviation aq., placed directly after the value of the constant, thus, 1.8aq. The difference between the value corrected and uncorrected, as a rule is less than five per cent, but may be sufficiently great to account for discordant results obtained by different persons.

The statement that the value of the constant increases or diminishes on dilution, is given for the purpose of attracting attention to the fact, since it may indicate the change from one isomer to another, or the presence of impurity. The cause of such variation is not always known. The assumption that a constant value not affected by dilution is a criterion of purity, and that a steady diminution is always an indication of impurity, was first made by Ostwald 1371, who in the same series of articles rejects this criterion when it affects unfavorably the position of an acid in a series. Since that time classes of acids have been found, as the alkyl succinic acids, in which there is always a diminution in value on dilution. Noyes 1342 in the case of a regular diminution in the value of the constant of o-nitrobenzoic acid of great purity, states that this diminution means nothing of great consequence. See also 515 and 2018. For a detailed treatment see 1609.

If the value of the constant is determined by conductivity measure-

ments, and there is an increase or diminution in the value on dilution, the particular value chosen depends on the structure of the compound. In the case of a diminution in the value, the value at a dilution of about 32 liters is taken when possible, as being fairly accurate and affording a standard value for that compound comparable with the greatest number of other compounds. If the value increases on dilution, in the case of the stronger amphoteric electrolytes the value at a dilution of about 1024 liters is taken. This value is selected, because in a number of cases, as for instance the amino-benzoic acids, it corresponds fairly well with the value obtained by other methods. If the compound is a polybasic acid, the value for a lower dilution is chosen, when the influence of the second and third carboxyl groups is evident. In other cases, it has been impossible to follow any definite rules.

The ionization constant for the second and third hydrogen and hydroxyl ions is also given, with an indication of the method by which it has been determined.

In *comparing the values of the ionization constant* obtained by two different persons, certain general considerations have to be taken into account, as the purity of the compound (and sometimes its identity), the method employed and whether the value chosen as the best, is a mean value, or is extrapolated or otherwise derived from the measurements. If the method is that of the electrical conductivity, three factors must be especially considered; the temperature; the specific conductivity of the water (or other solvent); and the value used for $\Lambda(\infty)$.

The temperature of the measurement is usually given, since its importance in chemical work has been recognized for such a long time. The ionization constant of most organic acids and bases increases with the temperature up to about 40° to 50°, and then diminishes as the temperature is raised still higher. See acetic acid for an illustration of this, and 1332 and 1341 for measurements covering a wide range of temperature. When no temperature is stated in an article, it is safe to assume that it was either 18° or 25°, except for compounds like the diazo compounds which decompose readily at ordinary temperatures.

The value of the specific conductivity of the water of solution gives an indication of its purity. The purification to water having a specific conductivity of $2 \text{ to } 3 \times 10^{-6}$ at 25° is so easy, that for a number of years, measurements have been made with water at least as pure as that. The question of whether this conductivity is to be subtracted in whole or in part or not at all, is still a matter of dispute, the correction made varying with the individual opinion. The difference made by this correction may be of some importance; thus in the case

of *α*-iso-phenylacetic acid at 25°, the ionization constant (multiplied by 10^6) is 3.76 with no correction, but is 3.67 when corrected for the conductivity of the water. This water had a specific conductivity of 1.4×10^{-6} at 25°. See 1533 for the details of this measurement.

The value used for $\Lambda(\infty)$ depends chiefly on the unit of conductivity, and on the values used for the equivalent conductivity of the hydrogen and hydroxyl ions; to a much less degree, on whether it is calculated from the measurements made, or is taken from a set of tables. For almost all measurements made before the year 1898, the Siemens unit was used. Since that time, either this unit or the reciprocal of the ohm then proposed by Kohlrausch is used, the tendency being more and more to use the reciprocal ohm. For acetic acid, at 25°, the value of $\Lambda(\infty)$ is about 364 in Siemens unit, and 388 in reciprocal ohms, the mean factor for the conversion to reciprocal ohms being 1.066. The error of using one unit for the other is rarely made. It is due to the false assumption that all values for the specific and molar conductivity published in the last ten years, are in reciprocal ohms. The value for the molar conductivity (really in Siemens unit) will be taken from some article, the value for $\Lambda(\infty)$ in reciprocal ohms will be taken from a table, and the ionization constant calculated from this mixture will naturally differ from any that has been known before.

The value for the equivalent conductivity of the hydrogen ion is not yet settled, there being a difference of about six per cent between the extreme values given for 25°, that is 340 and 365 in reciprocal ohms. There seems to be no doubt at the present time, that this value varies with the concentration; and it is possible that other factors may also influence it. See Kendall, Jour. Chem. Soc. 101, 1275, (1912), for a review of the subject with new data, and Lewis, Jour. Am. Chem. Soc. 34, 1631, (1912), for certain theoretical considerations. The value for $\Lambda(\infty)$ of acetic acid at 25°, will vary from 381 to 408, in reciprocal ohms, depending on the value used for the hydrogen ion. Taking the molar conductivity at a dilution of 32 liters as 9.2, this gives the ionization constant (multiplied by 10^6) as 1.86 in one case, 1.64 in the other. A difference as great as this is often used as a basis for showing that a compound has a particular structure, or is a new compound. Up to the year 1910, practically all the organic acids have had their ionization constants calculated with a value of $\Lambda(\infty)$ in which the equivalent conductivity of hydrogen is from 345 to 348, occasionally a little higher, but in no case high enough to make such a difference from other measurements, as has just been shown possible. But the use of this much higher value for the hydrogen ion is becoming more common, and may lead to some mistakes.

In the case of bases, the equivalent conductivity of the hydroxyl ion, makes a corresponding difference. But there have been practically no changes made in it by new measurements, since the year 1894. It is to be noted that Bredig 271, used an older value in calculating the ionization constants of the bases published by him in that year, and stated that with the present value the ionization constants are about sixteen per cent too high. In the tables they are given in their uncorrected form, with a statement of the correction. In Kohlrausch and Holborn's *Leitvermögen der Elektrolyte*, they are given uncorrected, though the values of the conductivity are calculated from the original form to reciprocal ohms.

The values of $\Lambda(\infty)$ calculated from measurements of the salts of acids, made at the same time and under the same conditions as the measurements of the acids, do not vary enough from the values published in the tables of Ostwald, and of Lundén* to cause any trouble. They ought to be more accurate for their purpose, than the table values. See White and Jones 1968a, for an illustration.

In determining the ionization constant by methods other than the direct measurement of electrical conductivity, the value used for the ionization constant of water often enters into the calculation. The value most frequently used is the old one for 26°, $k_w = 1.2 \times 10^{-14}$. If a measurement is made at 25°, the error from the use of this value is small, but the farther the temperature departs from 25° the greater is the error. At 0°, the constant of water is about 0.1 instead of 1.2, so that the substitution of this higher value in the equation $k = \frac{k_w}{x}$,

where x is the hydrolysis constant, will give a value for the ionization constant which is about ten times too large.

Calculation of the ionization constant by factors for various groups and for different positions of the same group, gives results that are not reliable. In some cases, the agreement is good, in others bad. There is not yet sufficient knowledge to make such a calculation of much value except where the constants of closely related compounds are known.

3. *Conductivity in water.* As a rule the only data given under this head are the values for the molar conductivity at 25°, for dilutions of 32 and 1024 liters (or as close to these dilutions as possible) and the value at infinite dilution. Occasionally the values for the corresponding dilutions at 0° are also given. In the case of the more important compounds, the references are arranged according to

* Lundén 1143 and Affinitätsmessungen an schwachen Säuren und Basen, gives a table of the values of $\Lambda(\infty)$ calculated for acids containing from twelve to thirty atoms, at temperatures from 0° to 50°.

temperature. When only one measurement of a compound has been made and the ionization constant determined from this, the temperature is given only under the head of the ionization constant, unless there is some intervening statement, such as the ionization constant of the second hydrogen ion. If all the references to the conductivity are desired, it is advisable to look up those given under the ionization constant as determined by the measurement of conductivity, as well as those given under this heading, though in general such references are given under both headings.

The values given for the molar conductivity are not reduced to a common unit, nor corrected for the specific conductivity of the water used, because in many articles there is a lack of data for making such reductions. Experience shows that when corrections are made in some cases and not in others, persons using a set of tables will assume that the correction is always made and that the values are comparable. Reference to the author list (which is necessary to find out the name of the person corresponding to the key number) shows at once whether an accurate comparison can be made with the values of other compounds. In articles published up to the year 1898, it is safe to assume that the unit is the Siemens unit. The factor to convert this into the reciprocal ohm varies from 1.063 to 1.069 for most measurements, the mean value 1.066 being sufficiently accurate for most purposes. For details see Kohlrausch, Holborn, Diesselhorst 1002, or Kohlrausch and Holborn, *Leitvermögen der Elektrolyte*. A few of the old measurements made in a special unit have been calculated to Siemens units when given in the tables, and a note of this change made both in the tables and in the author list. When the author list does not show the unit of measurement, it can often be found if a value of $\Lambda(\infty)$ is given for an acid, by comparing this value to that of other acids, or with the values in tables. A comparison of the value of the conductivity at a given dilution with that (in a known unit) of some similar compound at the same dilution is useful. But it may be quite misleading, unless the compounds are near each other in an homologous series.

4. *Conductivity in solvents other than water.* No numerical data are given. The references to inorganic solvents are given first, then to organic solvents. No distinction is made between pure solvents and solvents diluted with water. Reference to the subject index in which such a distinction is made, will usually settle this point. When alcohols are used as solvents, many measurements often cover the entire range from the pure solvent to very high dilutions or to pure water.

A number of researches of a qualitative nature have been made with these solvents, especially with the inorganic solvents. The results

of such researches are expressed in the tables with a qualifying clause to show that they are not quantitative, thus, "In ethyl alcohol, small cond." When, for any solvent, quantitative as well as qualitative measurements have been made, the references to the quantitative work are always given first, then the references to the qualitative work prefixed by the qualifying clause to show their nature.

5. *Miscellaneous measurements.* Under this heading are given references to a variety of measurements, most of them to the conductivity of the compound in solutions containing other compounds. In consequence, the heading in the tables usually begins, "Cond. with".

These measurements of mixtures have been made for a great variety of purposes and can not conveniently be subdivided in any brief way. For instance, under acetic acid they are divided into conductivity with inorganic compounds — acids, bases and salts; and with organic compounds — acids, bases, salts and other compounds. In the case of an acid, the measurement of the conductivity with a base may be made to show the number of carboxyl groups, or to show the effect of the presence of small or large amounts of the salt of the acid, or whether any salt formation actually occurs. If the measurement is of a solution to which an alcohol is added, the object may be to show the effect of adding a non-electrolyte, or to show if any esterification occurs. In other cases, as of a phenol in a solution containing iodine, the measurement may show that oxidation or substitution occurs.

These cases of mixtures of compounds can not strictly be separated from the cases of a compound in a dilute aqueous solution of a non-aqueous solvent, though in practice such a distinction is usually made. The references to the conductivity of mixtures of organic compounds are usually given under all the compounds in question.

The references to the compound as solvent, are to the conductivity of the compounds dissolved in it, or to complexes that may form. Thus, under acetic acid, the first reference to the acid as solvent gives the conductivity of sodium acetate in the pure acid, and in aqueous solutions of various strengths. The same reference is also to be found under the sub-heading of conductivity with organic salts. The references to the conductivity of compounds as solvents, are not complete for the cases when an inorganic compound is the solute.

The nature of the other miscellaneous measurements is obvious from the brief explanation, as, "under pressure," etc.

6. *Salts.* These are arranged, first as inorganic salts, then as organic, in alphabetical order.

The data given, when possible, are the molar conductivity at 25°, for dilutions of 32 and 1024 liters, of the sodium (or potassium) salts of acids, and the hydrochlorides of bases. This selection is made,

because these salts are most often made, and the conductivity of their solutions measured, and these dilutions are used to determine the basicity of acids. In a number of cases, the only data of a conductivity measurement given in the original article is the difference between the conductivity at 1024 and 32 liters. In the case of very readily hydrolyzed salts, when the measurement is also made with repression of hydrolysis by excess of acid or base, this measurement is also given.

The number of radicals in the salt is indicated by the figure prefixed. Under oxalic acid, for instance, Na.A is the mono-sodium or acid salt, while 2Na.A is the di-sodium salt. Under acetic acid, Ca.2A, is the calcium salt, requiring two acid radicals.

FORMULA INDEX.

This is arranged in the customary manner. For each compound is given only the name used in the tables, the synonyms being given in the tables. A number of salts are inserted for convenience, especially when the acid or base has not been made, or isolated in pure form. In general, salts are to be found by looking up the acid or base from which they are derived.

AUTHOR LIST.

The names of the authors are arranged alphabetically. Prefixes not beginning with a capital letter, as *de* and *von*, are not considered in the arrangement. A few errors may be present, on account of the apparent indifference of some persons as to the initials which belong to their names. The English names beginning with Mac and Mc are sometimes quoted in foreign literature without the prefix, thus, Coy instead of McCoy.

Each name is preceded by a number which is used throughout the book for all reference to that particular article. After the name, is given the abbreviation of the journal title, the series number in parenthesis, the volume number, page number and date. Then follows the name of any person who is said to have made a measurement described in the article, thus, 11 . . . (1898). *Meas. E. Cohen*. A cross reference is given from the name of the individual making the measurement; thus, under the letter C, is *Meas. E. Cohen*, see 11. If only a part of the measurements were made by a person other than the author, the name is preceded by the sign #, thus # *Meas. Smith*. The name of the measurer is so often given with scrupulous accuracy in the literature, that it has been necessary to burden the bibliography in this way in order to make known that such measurements

were not overlooked. On the other hand, there are many cases in which there is no doubt that the author did not make the measurements, but there is no way of finding out who did make them.

When an author has published articles in different journals, the journals are arranged in alphabetical order in two divisions, giving first the more accessible. Under each journal, the articles are arranged chronologically. For an illustration, see the references to J. Walker.

The title of the article is given in full, translated into English in the case of titles in Russian. If the same article, or a summary is printed in some other journal, the full title is not repeated, only enough being given to indicate that it is the same as in the first reference.

Articles in parenthesis contain no original measurements of the ionization constant or of the electrical conductivity of organic compounds.

In brackets immediately after the title, is given information as to whether the numerical data in the article are republished in some other journal. Such statements *do not refer to the text*. The unqualified statement, "same as", indicates that the numerical data are the same in both articles. The unqualified statement, "given in", indicates that there are additional numerical data, or additional compounds measured, in the article referred to. When it does not take too much space, the difference between the two articles is stated in the bracket. The most common difference is that one will give only the ionization constant, while the other will give full details of the measurement from which the constant was calculated, with tables of the conductivity at different dilutions, in the case of conductivity measurements. This difference is always noted in the bracket, by some such statement as, "k, but not Λ is given in". Information of other kinds is also given in brackets, as to whether an article contains only qualitative work, etc. In a certain number of cases, it is impossible to tell whether the same numerical data have been republished in different articles or whether new measurements of the same compounds have been made. Some duplications undoubtedly have been given in the tables on this account.

In the tables and in the subject index, in cases of repetition of measurements, only one key number is given, referring to the most accessible journal. Examination of the author list will show whether any other article contains the same numerical data.

After the title are given (when the original supplies them) certain data of use in comparing constants, or for further information. These are; the temperature, with extremes if several different temperatures have been used; the unit of conductivity; and the specific conduc-

tivity of the water of solution, with a note of whether this conductivity was subtracted from the conductivity of the solution, indicated by the abbreviation, "sub." Thus, κ aq. = 1×10^{-6} ; sub.

SUBJECT INDEX.

The headings in this index depend so much upon the individual point of view, that in using it, it is advisable first to look through the headings and to consider the definitions and illustrations.

In cases of doubt, or in cases open to legitimate difference of opinion, the reference is given under all possible headings.

For the sake of brevity, consecutive references by the same author are sometimes given inclusively, thus 60-63, instead of giving each number separately. These inclusions are never used if the numbers cover more than one name.

JOURNAL LIST.

The journals examined include all the important journals, and as many of the minor journals (and dissertations) as has been possible.

Most of the articles in the Journal of the Russian Physico-chemical Society have been examined by Mr. G. Torossian, and the statements translated by him. They have been checked by me, as far as a very limited knowledge of the language allows.

The arrangement is alphabetical for the chief words in the title, particles such as, *and*, *de*, *der*, etc., not being regarded. This separates distinct publications of the same society, as Proceedings, and Memoirs, but does not necessitate an exact knowledge of the title.

The volume number (and when necessary the page number or division number) and the date of the last volume examined, are given immediately after the title.

When a title is preceded by the sign #, as # Annales de, etc., the journal is not complete through the year 1910, either because it has been impossible to examine one or more volumes, or because the volume for the year 1910 has not been issued. A note of the number or of the date of missing volumes is given.

The titles are those in use at the present time. If any important change in a title has been made, the fact is noted, and a cross reference is given.

Different libraries adopt different methods of numbering volumes when a publication appears in several series, some using continuous numbers, others following the numbers of each series. Different methods of dating are also used, when a volume covers more than one year, some giving the date of the year of publication, others the dates

of the years included in the volume, others the date of the appearance or of the reading of the last article in the volume — a date that may be several years earlier than the date of publication. These differences are a source of some confusion in references in the literature. In addition to these difficulties, some societies issue a number of publications, which may be bound separately under individual titles, or in various combinations under various titles.

Journals are sometimes referred to by the name of a past or present editor, as Drude's *Annalen* instead of *Annalen der Physik*. Cross references have been given to all the cases that have come to my notice.

The names of journals which have contained no data are inserted in order to show exactly what journals have been examined.

At the end is added a list of the authors of articles in the *Journal of the Russian Physico-chemical Society*, arranged chronologically, with the page numbers of the articles. This is given because the variations in names due to different systems of transliteration, make checking of references to this journal slightly difficult.

BOOKS.

Much of the numerical data published in the journals has been collected and republished in various forms in text-books and monographs. Three of these are very useful. Taking them in chronological order; *Das Leitvermögen der Elektrolyte*, Kohlrausch and Holborn, (1898), contains fairly complete data of the ionization constants, and of electrical conductivity in aqueous solution (with all values calculated to reciprocal ohms, but no values of $\Lambda(\infty)$ given). Bredig's constants for the bases, as previously noted, are about sixteen per cent too high. *The Conductivity of Liquids*, Tower, (1905), contains data of the specific conductivity of pure liquids, and some data of the conductivity in solvents other than water; and also some data of conductivity in aqueous solution, published between the years 1898 and 1905. *Affinitätsmessungen an schwachen Säuren und Basen*, Lundén, (1908), gives tables of the best values of most of the ionization constants published from 1889 up to 1908, corrected (when necessary) for the values of the ionization constant of water at various temperatures, with a table of the values used in making these corrections. Bredig's ionization constants for the bases are given with no comment that they are too high. A number of tables of value are also given, though little numerical data of electrical conductivity are given, except as illustrations. All three books contain some bibliography. *Die Theorie der elektrolytischen Dissociation*, Abegg, (1903), also has some numerical data of value. Volume 1 of

the *Tables Annuelles Internationales de Constantes et Données Numériques*, containing complete numerical data of ionization constants and of electrical conductivity published in the periodical literature for 1910 has been issued. Volume 2 for the year 1911, is in print, but at the time of writing has not been published.*

GENERAL.

The difficulty of a search through the literature for all references to subjects which are rarely indicated by the titles of the articles, can be appreciated only by those who have done that sort of work. Omissions are to be expected, chiefly I should suppose, in the case of the measurements of the conductivity of salts.

When an article has been found, there is sometimes doubt and sometimes entire uncertainty as to what the author really means. The confusion due to nomenclature has already been mentioned. There is also confusion from diversity in the use of symbols. For the ionization constant, a small *k* or a capital *K* is used indifferently (and occasionally an italic *k*), although in the majority of cases a capital *K* (following the usage of Ostwald) stands for 100*k*. When numerical data of the measurement are given, it is possible to find out by calculation, whether *k* or 100*k* is meant. But the simple statement that *k* (or *K*) is a given quantity, leaves the case in some obscurity, unless the compound is one of an homologous series, in which the values of the ionization constant for members of the series close to it are known. It must always be remembered, that the rules given for calculating constants by means of factors for certain groups, and positions, while satisfactory in many cases, are quite unreliable in many other cases.

In the case of the ionization constant, the use of some letter other than a Roman *k*, may lead to confusion, unless there is a direct statement that this constant is meant. For instance, the Greek letter kappa, is frequently used as a symbol for specific conductivity. The statement, "electrical conductivity shows that $\kappa = 0.14$ ", may mean that the specific conductivity is 0.14, or it may mean that the ionization constant is this quantity, for an italic *k* may have been written, which was incorrectly printed.

Almost every letter in the English alphabet, and many of the letters of the Greek alphabet have been used as symbols for specific conductivity, molar conductivity and degree of dissociation. The use of such a symbol with no explanation, leaves in doubt which of these three quantities was intended, unless there is some way to check it from preceding articles, or from the context.

* It has been issued in July, 1913.

It is interesting to note that in general the obscurity varies with the chief occupation of the author. At one extreme is the chemist chiefly interested in organic work. He describes his compound accurately, gives the formula, and some data, as melting-point, etc., by which it may be identified. Then he says, "The conductivity of this acid I have found as follows: $k = 1.4 \times 10^{-6}$." But he means the ionization constant, not the specific conductivity, and gives no data of conductivity values at all, in spite of his direct assertion that he does. It is left to the reader to find out what he means, and to check off as far as possible the value of the constant, in order to know whether k or $100k$ is meant. At the other extreme is the chemist chiefly interested in physical chemistry. He states that the compound he is using is methylsalicylamide; and that it is pure because it came from Kahlbaum, and the melting-point remained unchanged after five recrystallizations from alcohol. All the definitions and data relating to the measurement of the conductivity are given clearly. But there may be grave doubt as to what the compound is. The name is ambiguous, for the position of the methyl group is not stated. No formula is given, and no melting-point. Even the fact that this unknown melting-point remained unchanged after recrystallization is no proof of purity, for many cases are known of mixed compounds of definite melting-point which crystallize unchanged from one solvent and can be broken up only by crystallization from a different solvent.

In the determination of the ionization constant by methods other than the direct measurement of electrical conductivity, certain other obscurities may be present.

The identity of the compounds, I have verified as far as possible by a careful examination of the formula, method of preparation, melting-point or any other data available in the original. The values for the ionization constant have been checked off, whenever the necessary data have been given in the original, making possible the correction of some mistakes due to errors in calculation.

Numerical data taken from publications generally inaccessible, as dissertations, are given more fully in the tables than the data from accessible publications. More numerical data and more explicit subdivisions of headings are given in the case of important compounds, than of unimportant compounds.

A small number of compounds are given in the tables, which are mentioned neither in Beilstein, nor in Richter's Lexikon. Since the measurements of their conductivity are described by thoroughly reliable men, it seems reasonable to suppose that such compounds were actually made, but that, for some reason, the description of them has never been published.

Since the object of publishing bibliography is the saving of time to others, I have used much freedom in certain methods of presentation. Thus, the name Tschugaeff is familiar to many chemists. It is used in the author list under this form, and not under the form required by the system of transliteration employed. The cross reference is therefore from the unusual to the better known form. This same principle of using well known forms, has been employed in a variety of other cases. A liberal use of cross references and some repetition have been necessary to cover all cases.

The reliability of the work published in the journals is usually sufficient, but its accuracy is not as great as is supposed. This is due both to lack of definite knowledge of certain theoretical considerations necessary in making various corrections, and also to the uncertainty of some of the fundamental values. The limitations of the methods employed are fairly well understood, though there is a tendency to exaggerate the accuracy of some of these methods, as for instance colorimetric methods, especially when used in the case of very weak compounds.

Our knowledge of the action of the solvent on the solute is still imperfect, and the corrections for such action, even when water is the solvent, are either matters of opinion, or are not known at all. Various other corrections are still uncertain, because our knowledge of the subject is not yet perfect.

There are three fundamental values, the equivalent conductivity of the hydrogen ion, and of the hydroxyl ion, and the ionization constant of water, one of which enters into almost every calculation of the ionization constant of any compound. It must be emphasized again, that any considerable change in one of these values affects considerably the value of all the ionization constants calculated with its aid. A recalculation of practically every constant that has been published up to the present time, may be necessary when these three values are finally established.

The rounding off to tenths of the numerical data printed in the tables has saved much space and added greatly to the accuracy of the comparison of the figures with the originals, while the error involved is too slight to be of consequence, except in a few cases.

The apparently excessive number of abbreviations is due to the fact that all abbreviations are given, even those so commonly used that they are not usually explained, such for instance, as *o* for ortho. Most of the abbreviations, including those of the titles of journals, can be understood without looking up the full meaning.

Details are given in this explanation which will appear to many to be unnecessary. But together with the abbreviations, they make it possible to understand anything that is in this book, without the

special search for the usage of the time or place or school or author, so often necessary for the understanding of what has been printed; for, in addition to changes due to the growth of knowledge, there are changes of fashion in science as well as in the world at large. In the case of nomenclature, it has often happened that an author proposes, but Beilstein disposes of new ideas.

Against two criticisms I have no defense. The first is, that this is an overelaboration of an unimportant subject. The second (which is not contradictory to the first) is, that sufficient numerical data are not given to make the table of compounds of much value. Other criticisms could be answered, for many results are not yet positively established. Theories and compounds that have, "forever been swept from the literature," have at times come back with an increased knowledge, while others that have been firmly established by physical chemistry, have been greatly modified or have disappeared. Our understanding of the dissociation theory has changed so much by degrees, that the statement of James Walker made two years ago,* "We are justified in attributing the fact that acetic acid is a weak acid, whilst trichloroacetic acid is a powerful one, rather to the properties of the un-ionized substances than to the properties of the ions," is an upholding of the dissociation theory and not an attack on it, as would have been the case twenty years ago.

Serious physical disability coming when the greater part of the material for this bibliography was collected, has made necessary rather awkward insertions, has delayed its publication, and prevented as full a presentation of the subject as I had hoped. No information at all has been given about apparatus and methods. The references to the conductivity of inorganic compounds in organic solvents are incomplete, though recent work makes it clear that in many cases some complex is formed. I have been unable to make some changes in arrangement, which would have given a more systematic presentation. The references often contain more information on the subject than might be gathered from the headings under each compound, for great detail in subdivision of headings is obviously out of place in a bibliography of this sort. While its use will be limited to a small number of persons, I trust that the work as it stands will be of sufficient value to justify a very dreary and unpleasant task.

Thanks are due to Dr. Wilder D. Bancroft, Dr. Alice F. Blood and Dr. James F. Norris for advice, and to Dr. Olin F. Tower for permission to use some tables from his book.

MARCH, 1913.

* Chem. News, 104, 106, (1911).

ABBREVIATIONS OF WORDS.

A	acid. For salts, A is used to indicate the acid radical, thus: $\text{NaCl} = \text{Na.A}$; $\text{Na}_2\text{SO}_4 = 2\text{Na.A}$.
Afd.	afdeeling.
alc.	alcohol.
aq.	water.
asym.	asymmetrical.
B	base. For salts, this is used to indicate the radical, as under A.
b. p.	boiling-point.
Bu	butyl = C_4H_9 .
Bz	benzoyl = $\text{C}_6\text{H}_5\text{CO}$.
catal.	catalysis.
cf.	compare.
colorim.	colorimetric.
cond.	conductivity.
cor.	corrected.
d	dextro.
dec.	decomposition.
dil.	dilute.
diln.	dilution.
Et	ethyl = C_2H_5 .
Fasc.	fascicule.
f. p.	freezing-point.
fum.	fumaroid.
g	gram.
Hg. U.	mercury unit.
hydrol.	hydrolysis.
inact.	inactive.
inorg.	inorganic.
insol.	insoluble.
k	ionization constant. Second k or third k is the constant of the second or third H or OH ion.
k . . . aq.	ionization constant, calculated without subtracting the conductivity of the solvent.
k_w	ionization constant of water.
κ	specific conductivity.

A	equivalent conductivity.
l	laevo.
liq.	liquid.
m	meta.
M	conductivity of a salt, when the hydrolysis is not checked by excess of acid or base. Used chiefly when the conductivity with hydrolysis checked by acid or base, is also given.
mal.	maleinoid.
Me	methyl = CH_3 .
Meas.	measured by. # Meas. = in part measured by.
Mem.	memoir.
m. p.	melting-point.
μ	molar conductivity.
N	substituting group attached to nitrogen.
neutral.	neutralization.
N. F.	Neue Folge.
no.	number.
norm.	normal.
N. S.	new series.
o	ortho.
O	substituting group attached to oxygen.
p	para.
part.	partition.
Ph	phenyl = C_6H_5 .
Pr	propyl = C_3H_7 , in formulae. In names, as Pr-Methylin-dole, Pr shows the ring to which the substituting group is attached.
qual.	qualitative.
q. v.	which see.
R	ring or cyclic.
rac.	racemic.
R. O.	reciprocal ohms.
sapon.	saponification.
satd.	saturated.
Sect.	section.
sol.	soluble.
soln.	solution.
solub.	solubility.
Sp. gr.	specific gravity.
S. U.	Siemens unit.
sub.	subtracted.
sym.	symmetrical.
T	temperature in degrees centigrade.

uncor.	uncorrected.
v	volume.
vac.	vacuum.
Vol.	volume.
∞	infinite dilution.

ABBREVIATIONS OF JOURNAL TITLES.

For a complete list of the journals examined see the section on Journals. The abbreviations are only of the titles of those journals from which references have been taken.

Abhand. Kön. Sächs. Ges. Wis. Abhandlungen der königlich sächsischen Gesellschaft der Wissenschaften. Mathematisch-physische Classe.

Am. Chem. Jour. American Chemical Journal.

Am. Jour. Physiol. The American Journal of Physiology.

Am. Jour. Science. The American Journal of Science.

Analyst. The Analyst.

Ann. Chemie. Annalen der Chemie. (Justus Liebig's).

Ann. Chim. Phys. Annales de chimie et de physique.

Ann. Physik. Annalen der Physik.

Ann. Physik. Ergänzt. Annalen der Physik und Chemie. Ergänzungsband.

Ann. Univ. Lyon. Annales de l'université de Lyon.

Arbeit. k. Gesundh. Arbeiten aus dem kaiserlichen Gesundheitsamte.

Arch. Anat. Physiol. Archiv für Anatomie und Physiologie. Physiologische Abteilung.

Arch. Fisiol. Archivio di fisiologia.

Arch. Gesamt. Physiol. Archiv für die gesammte Physiologie des Menschen und der Tiere. (Pflüger's Archiv).

Arch. Musée Teyler. Archives du Musée Teyler. (Haarlem).

Arch. Pharm. Archiv der Pharmazie.

Arch. Sci. Phys. Nat. Archives des sciences physiques et naturelles.

Arkiv Kemi. Arkiv för kemi, mineralogi och geologi.

Atti Accad. Gioenia. Atti della accademia Gioenia di scienze naturali in Catania.

Atti Accad. Torino. Atti della reale accademia delle scienze di Torino.

Atti Ist. Veneto. Atti del reale istituto veneto di scienze, lettere ed arti.

Atti Pont. Accad. Nuov. Lincei. Atti della pontificia accademia romana dei nuovi Lincei.

Beibl. Ann. Physik. Beiblätter zu den Annalen der Physik.

Beitr. Chem. Physiol. Pathol. Beiträge zur chemischen Physiologie und Pathologie. Zeitschrift für die gesamte Biochemie.

- Ber. Deutsch. Chem. Ges. Berichte der deutschen chemischen Gesellschaft.
- Ber. Verhand. Sächs. Ges. Wis. Berichte über die Verhandlungen der königlich sächsischen Gesellschaft der Wissenschaften zu Leipzig. Mathematisch-physische Klasse.
- Bihang. Svensk. Vet.-Akad. Hand. Bihang till kongl. svenska vetenskaps-akademiens handlingar.
- Biochem. Zeit. Biochemische Zeitschrift.
- Bol. Accad. Gioenia. Bollettino delle sedute della accademia Gioenia di scienze naturali in Catania.
- Bul. Acad. Belg. Bulletin de l'académie royale des sciences, des lettres et des beaux-arts de Belgique. Bulletins de la classe des sciences.
- Bul. Acad. Cracov. Bulletin international de l'académie des sciences de Cracovie.
- Bul. Soc. Chim. Bulletin de la société chimique de France.
- Bul. Soc. Franc. Phys. Bulletin des séances de la société française de physique.
- Bul. Soc. Sci. Nancy. Bulletin de la société des sciences de Nancy.
- Bul. Soc. Vaudoise. Bulletin de la société vaudoise des sciences naturelles.
- Chem. News. The Chemical News.
- Chem. Ztg. Chemiker-Zeitung.
- Compt. Rend. Comptes rendus hebdomadaires des séances de l'académie des sciences. (Paris).
- Dis. Dissertation.
- Ergebn. Physiol. Ergebnisse der Physiologie.
- Festschr. Festschrift.
- Gaz. Chim. Ital. Gazzetta chimica italiana.
- Giorn. Sci. Nat. Econ. Giornale di scienze naturali ed economiche.
- Habilitationsschr. Habilitationsschrift.
- Jour. Am. Chem. Soc. The Journal of the American Chemical Society.
- Jour. Biol. Chem. The Journal of Biological Chemistry.
- Jour. Chem. Soc. The Journal of the Chemical Society. (London).
- Jour. Chim. Phys. Journal de chimie physique.
- Jour. Indust. Eng. Chem. The Journal of Industrial and Engineering Chemistry.
- Jour. Phys. Journal de physique.
- Jour. Phys. Chem. The Journal of Physical Chemistry.
- Jour. Physiol. The Journal of Physiology.
- Jour. Prakt. Chem. Journal für praktische Chemie.
- Jour. Russ. Phys.-chem. Soc. Journal of the Russian Physico-chemical Society.

- Jour. Soc. Chem. Ind. The Journal of the Society of Chemical Industry.
- Jour. Soc. Dyers Colour. The Journal of the Society of Dyers and Colourists.
- Kong. Danske Vids. Selsk. Skrift. Det kongelige danske videnskabernes Selskabs Skrifter.
- Med. Nobelinst. Meddelanden från k. vetenskapsakademiens Nobelinstitut.
- Mém. Acad. Belg. Mémoires couronnés et autres mémoires publiés par l'académie royale des sciences, des lettres et des beaux-arts de Belgique. In 8°. Classe des sciences.
- Mem. Accad. Bologna. Memorie della reale accademia delle scienze dell'istituto di Bologna.
- Mem. Accad. Lincei. Memorie della reale accademia dei Lincei. Classe di scienze fisiche, matematiche e naturali.
- Mem. Accad. Torino. Memorie della reale accademia delle scienze di Torino. Scienze fisiche, matematiche e naturali.
- Mem. Pont. Accad. Nuov. Lincei. Memorie della pontificia accademia romana dei nuovi Lincei.
- Mem. Proc. Manchester Lit. Phil. Soc. Memoirs and Proceedings of the Manchester Literary and Philosophical Society.
- Mem. R. Acad. Madrid. Memorias de la real academia de ciencias exactas, físicas y naturales de Madrid.
- Mem. R. Accad. Modena. Memorie della regia accademia di scienze, lettere ed arti in Modena.
- Monatsh. Monatshefte für Chemie.
- Nachr. Ges. Wis. Göttingen. Nachrichten von der königl. Gesellschaft der Wissenschaften zu Göttingen. Mathematisch-physikalische Klasse.
- Nature. Nature.
- Naturwis. Rundsch. Naturwissenschaftliche Rundschau.
- Nuovo Cim. Il nuovo cimento.
- Öfvers. Finska Vet.-Soc. Förhand. Öfversigt af finska vetenskaps-societetens förhandlingar. (Helsingfors).
- Öfver. K. Vet.-Akad. Förhand. (Stockholm). Öfversigt af kongl. vetenskaps-akademiens förhandlingar. (Stockholm).
- Ov. Danske Vids. Selsk. Forhand. Oversigt over det kongelige danske videnskabernes Selskabs Forhandlingar.
- Phil. Mag. The London, Edinburgh and Dublin Philosophical Magazine and Journal of Science.
- Phys. Rev. The Physical Review.
- Phys. Zeit. Physikalische Zeitschrift.
- Proc. Am. Acad. Arts Sci. Proceedings of the American Academy of Arts and Sciences.

- Proc. Am. Ass. Advanc. Sci. Proceedings of the American Association for the Advancement of Science.
- Proc. Cambridge Phil. Soc. Proceedings of the Cambridge Philosophical Society.
- Proc. Chem. Soc. Proceedings of the Chemical Society. (London).
- Proc. Iowa Acad. Proceedings of the Iowa Academy of Sciences.
- Proc. Phys. Soc. London. Proceedings of the Physical Society of London.
- Proc. R. Soc. Edinburgh. Proceedings of the Royal Society of Edinburgh.
- Proc. R. Soc. London. Proceedings of the Royal Society of London.
- Proc. Trans. Nova Scot. The Proceedings and Transactions of the Nova Scotian Institute of Science.
- Proc. Trans. R. Soc. Canada. Proceedings and Transactions of the Royal Society of Canada.
- Proc. Washington Acad. Proceedings of the Washington Academy of Sciences.
- Progr. Programmschrift.
- Rec. Trav. Chim. Recueil des travaux chimiques des Pays-Bas et de la Belgique.
- Rend. Accad. Lincei. Rendiconti della reale accademia dei Lincei.
- Rend. Accad. Scienz. (Napoli). Rendiconto dell'accademia delle scienze fisiche e matematiche (sezione della società reale di Napoli).
- Rend. R. Ist. Lombardo. Rendiconti. Reale istituto lombardo di scienze e lettere.
- Rend. Soc. Chim. Roma. Rendiconti della società chimica di Roma.
- Rev. R. Acad. Madrid. Revista de la real academia de ciencias exactas, físicas y naturales de Madrid.
- Schrift. Naturw. Ver. Schleswig-Holstein. Schriften des naturwissenschaftlichen Vereins für Schleswig-Holstein.
- Science. Science.
- Sitzber. Akad. Wien. Sitzungsberichte der mathematisch-naturwissenschaftlichen Classe der kaiserlichen Akademie der Wissenschaften. (Wien).
- Sitzber. Ges. Isis Dresden. Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft Isis in Dresden.
- Sitzber. Ges. Naturw. Marburg. Sitzungsberichte der Gesellschaft zur Beförderung der gesamten Naturwissenschaften. (Marburg).
- Sitzber. K. Preuss. Akad. Berlin. Sitzungsberichte der königlich preussischen Akademie der Wissenschaften. (Berlin).
- Sitzber. Phys.-med. Ges. Würzburg. Sitzungsberichte der physik-med. Gesellschaft zu Würzburg.

- Trans. Am. Electrochem. Soc. Transactions of the American Electrochemical Society.
- Trans. Faraday Soc. Transactions of the Faraday Society.
- Trans. R. Scot. Soc. Transactions of the Royal Scottish Society of Arts.
- Trans. R. Soc. Edinburgh. Transactions of the Royal Society of Edinburgh.
- Trans. R. Soc. London. Philosophical Transactions of the Royal Society of London.
- Trans. Wisconsin Acad. Transactions of the Wisconsin Academy of Sciences, Arts and Letters.
- Verhand. Akad. Amsterdam. Verhandelingen der koninklijke akademie van wetenschappen. (Amsterdam).
- Verhand. Deutsch. Phys. Ges. Verhandlungen der deutschen physikalischen Gesellschaft.
- Verhand. Naturf. Ges. Basel. Verhandlungen der naturforschenden Gesellschaft in Basel.
- Verh. Ges. Deutsch. Naturf. Aerzte. Verhandlungen der Gesellschaft deutscher Naturforscher und Aerzte.
- Verslag Akad. Amsterdam. Verslag van de gewone vergaderingen der wis- en natuurkundige afdeeling. Koninklijke akademie van wetenschappen te Amsterdam.
- Zeit. Analyt. Chem. Zeitschrift für analytische Chemie.
- Zeit. Angew. Chem. Zeitschrift für angewandte Chemie.
- Zeit. Anorg. Chem. Zeitschrift für anorganische Chemie.
- Zeit. Biol. Zeitschrift für Biologie.
- Zeit. Chem. Ind. Kolloide. Zeitschrift für Chemie und Industrie der Kolloide.
- Zeit. Elektrochem. Zeitschrift für Elektrochemie und angewandte physikalische Chemie.
- Zeit. Phys. Chem. Zeitschrift für physikalische Chemie.
- Zeit. Physiol. Chem. Zeitschrift für physiologische Chemie. (Hoppe-Seyler's).
- Zeit. Ver. Rübenzuck. Ind. Zeitschrift d. Vereins f. Rübenzucker Industrie.

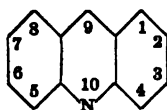
CYCLIC FORMULAE.

THE formulae given here are mostly type formulae, that is the formulae of compounds selected as the simplest members of various groups of compounds. The position of substituting groups is indicated in the name of a compound by numbers, the numbers corresponding to those used in the formula of the type compound.

The presence of CH is shown by an angle. Any other combination of elements is given in full. Valences are not represented. Tautomeric formulae are not given as a rule, nor the formulae of alkaloids and dyes. For the purpose of comparison with original articles, and with older names, various letters which represent position are given as well as numbers.

In the tables the name of the type compound may be given in the first name, as in dimethyl-parabanic acid, or it may be given in one of the synonyms in parenthesis, as in the case of alizarin (1,2-dihydroxy-anthraquinone). In a more complicated case, as in the case of anilopyrine (which is referred to pyrazole), iminopyrazole is also given as a type formula to show the manner of attachment of the imino group. In certain of the types no numbers are shown, as in cyclobutane, because it is immaterial where the numbering begins. In such a case, the position of numbered substituting groups is readily found.

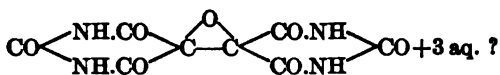
For a detailed treatment of certain doubtful or unsettled points concerning names, see the heading "nomenclature," in the explanation.



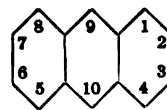
Acridine



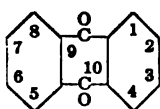
Alloxan



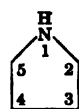
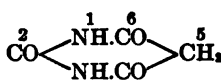
Alloxantina



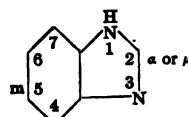
Anthracene



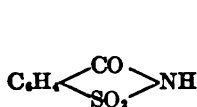
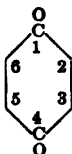
Anthraquinone

Azole
(Pyrrole)

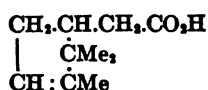
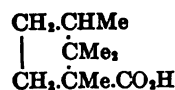
Barbituric Acid



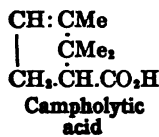
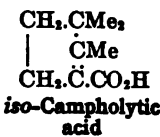
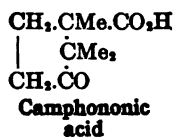
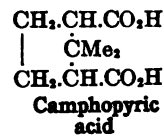
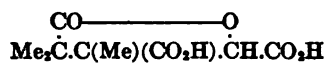
Benzimidazole

o-Benzoic
sulphinide

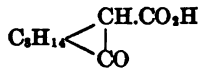
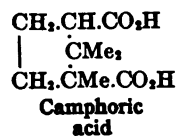
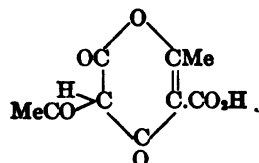
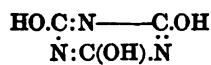
p-Benzoquinone

α-Campholenic
acid

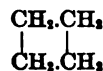
Campholic acid

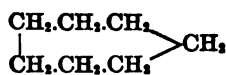
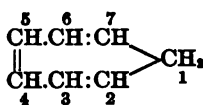
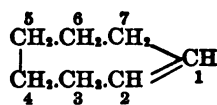
Campholytic
acidiso-Campholytic
acidCamphononic
acidCamphopyric
acid

Camphoranic acid

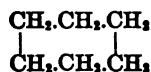
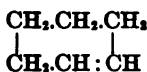
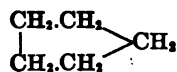
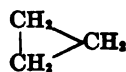
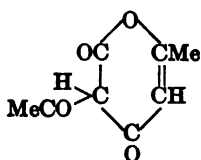
Camphorcarboxylic
acidCamphoric
acidCarboxydehydroacetic
acid

Cyanuric acid

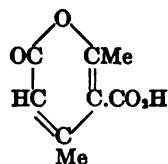
Cyclobutane
(Tetramethylene)

Cycloheptane
(Heptamethylene)2, 4, 6-Cyclohepta-
triene

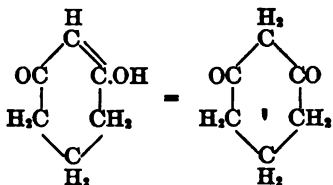
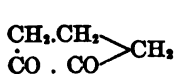
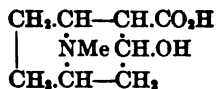
1-Cycloheptene

Cyclohexane
(Hexahydro-
benzene.
Hexamethyl-
ene)Cyclohexene
(Tetrahydro-
benzene)Cyclopentane
(Pentamethylene)Cyclopro-
pane
(Trimethyl-
ene)

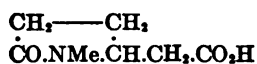
Dehydroacetic acid



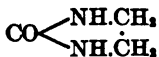
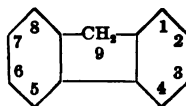
iso-Dehydroacetic acid

Dihydro-resorcinol. (m-Diketo-
hexamethylene)Diketo-hexamethylene
see Dihydro-resorcinolDiketo-penta-
methylene

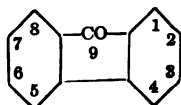
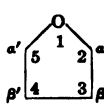
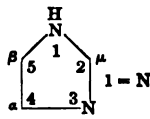
l-Ecgonine



rac.-Ecgoninic acid

Ethylene
oxideEthylene
urea

Fluorene

Fluorenol = Hydroxy-
fluoreneFluorenone (9-Keto-
fluorene)Furfuran
(Furane)Glyoxaline
(Imideazole)Heptamethylene see
Cycloheptane

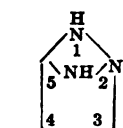


Hexahydro-benzene
see Cyclohexane

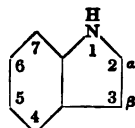
Hexamethylene
see Cyclohexane

Hydroxamic acid

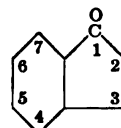
Imideazole see
Glyoxaline



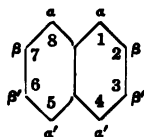
2,5-Iminopyrazole



Indole. (Pr-shows
substitution in the
N ring)

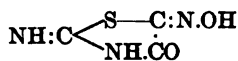


Indone *
(1-Ketoin-
dene)



Ketofluorene see
Fluorenone

Naphthalene

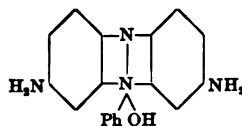


**iso-Nitrosothio-
hydantoin**



Parabanic acid

Pentamethylene see
Cyclopentane



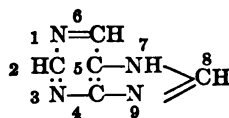
Phenosafranin



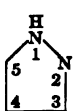
**Phenylisoxazolecar-
boxylic acid**



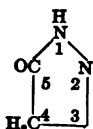
**3-Phenylisoxazo-
lone (5)**



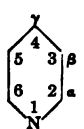
Purine



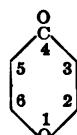
Pyrazole.
See also Im-
inopyrazole



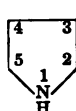
**Pyrazo-
lone(5)**



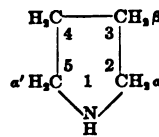
Pyridine



Pyrone



Pyrrole
(Azole)

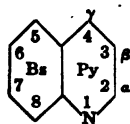


Pyrrolidine

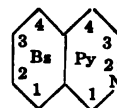
* The indone of rosindone contains a N ring.

CYCLIC FORMULAE

Pyrryl; used for derivatives of **Pyrrrole**

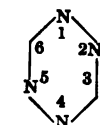
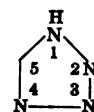
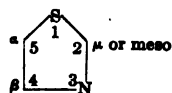
**Quinoline**

8 = o = [1]
7 = m = [2]
6 = p = [3]
When numbered from the Bs ring

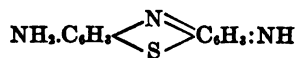
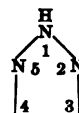
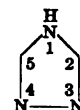
**iso-Quinoline**

Tetrahydro-benzene
see **Cyclohexene**

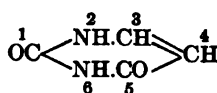
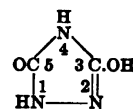
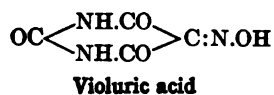
Tetramethylene see
Cyclobutane

**1, 2, 4, 5-Tetrazine****1, 2, 3, 4-Tetrazole****Thiazole**

Thienyl; used for derivatives of **Thiophene**

**Thionine****Thiophene****Thiourazole****1, 2, 5-Triazole****1, 3, 4-Triazole**

Trimethylene see
Cyclopropane

**Uracil****Urazole****Violuric acid**

TABLES

THE compounds are arranged alphabetically, except where the numerical order is more natural, as in the case of mono- and di- derivatives. Immediately after each acid are given the amides, the anhydride and then the esters. Iso-, allo- etc. compounds are placed after the normal compound, the prefixes not being considered.

The headings under each compound are: (1) the specific conductivity of the pure compound; (2) the ionization constant; (3) the conductivity in aqueous solution; (4) the conductivity in solvents other than water; (5) miscellaneous measurements; (6) the conductivity of the salts.

Numbers in bold face type are bibliographical key numbers, referring to the corresponding numbers in the author list. When the same measurements are published in more than one journal, the key number is to the most accessible article. In the author list, after the title of this article are given references to the less accessible articles.

When the value of the ionization constant has been determined by measurements of the conductivity of the compound, no statement of the method is made except for emphasis; other methods are shown by an abbreviation in parenthesis. The abbreviation aq., placed after the value, shows that the conductivity of the water has not been subtracted in calculating the value. Second, etc., k, means the constant of the second, etc. H or OH ion.

Numerical values of conductivity, unless otherwise stated, are for aqueous solutions; with the obvious exception of those for the specific conductivity of the pure compound, which can always be recognized because neither concentration nor dilution is given. If all the references to the conductivity in water are desired, look up also the references given under the ionization constant, for in some cases these have not been repeated under the heading, conductivity in aqueous solution.

The dilution in liters is given in parenthesis in its proper place. Thus, $\Lambda(32) = 9$, shows that the equivalent conductivity at a dilution of 32 liters is 9 reciprocal ohms, or whatever unit may be used.

The values given for the equivalent and the molar conductivity are in the unit used in the original article, unless otherwise stated in the table. Reference to the author list will show what this unit is.

When different values of the ionization constant or of the conductivity are compared, it is advisable to read in the explanation the precautions necessary for a proper comparison.

A.

Abietic acid. $C_{20}H_{30}O_2$; also given as $C_{19}H_{28}O_2$.

Cond. with NaOH; acid of m. p. 153° – 154° , and m. p. 179° ;
1017. With NaOH in Et alc.; acid of m. p. 167° – 172° ;
1508.

Acet- see **Acetyl-** for most compounds; see also **Aceto-**.

Acetaldehyde. $C_2H_4O = MeCHO$.

$\kappa \times 10^6$ at $0^\circ = 1.20$; b. p. 20° – 21° ; 1843. Also 1842, 1844. At
 $15^\circ = 1.67$; 1844.

$k_A \times 10^{16}$ at $0^\circ = 7.0$ (hydrol.); 512. At $1^\circ = 5.0$ (hydrol.); 512.
At 25° , $\Lambda(13.1) = 4.9$, $(104.8) = 14.3$; 959. T not stated; 1843.
In HCN, no cond.; 943. In NH_3 , qual.; 606. In $MeNH_2$, fair
cond.; 637.

Cond. with inorg. acids and bases; 512, 1843. As solvent of
various salts; 1844. Of compound with H_2SO_3 ; 959.

Acetaldehyde ammonia in NH_3 , qual.; 606.

Meta-acetaldehyde. $(C_2H_4O)_x$. $x = 2$ or 4.

In H_2SO_4 ; 750.

Para-acetaldehyde. (Paraldehyde). $(C_2H_4O)_x$. x probably is 3.

$\kappa \times 10^7$ at 25° is less than 3.4; 1106, 1107.

At 15° , $\Lambda(32) = 0.7$, $(64) = 1.1$; 1741. – 1843.

In H_2S , no cond.; 1897. In H_2SO_4 ; 750. In NH_3 , qual.; 606.

As solvent; 1106, 1107.

Acetaldehyde ammonia. C_2H_7ON .

In NH_3 , small cond.; 606.

Acetaldehyde sulphurous acid. $C_2H_5O_4S = Me.CHOH.HSO_3$.

$k_A \times 10$ at $25^\circ = 3.6$; diminishes on diln. $\Lambda(26.2) = 332.7$,
 $(104.8) = 338.8$, $(\infty) = 378$; 959.

Acetaldoxime. (Methyl aldoxime). $C_2H_5ON = MeCH:NOH$.

$\kappa \times 10^8$ at 25° is less than 1; b. p. 114° – 115° @ 749 mm.; 1843,
1844.

Cond. as solvent of NEt_4I ; 1844.

Acetamide see **Acetic acid amide**.

Acetamino- see **Acetylamino-**

Acetanilide. $C_8H_9ON = MeCO.NHPh$.

$k_B \times 10^{14}$ at $40.2^\circ = 4.4$ (catal.); m. p. 115° ; 1995.

In HBr , good cond.; in H_2S , no cond.; 1897. In HCN, small
cond.; 943. In NH_3 , fair cond.; 606.

Acetanilino- see **Acetylanilino-**

Acethydroxamic acid. $C_2H_5O_2N = MeCH.N.OH$.

$k_A \times 10^8$ [at 25°] = 2.8.

$\Lambda(14.5)=0.21$, $(58.2)=0.7$, $(\infty)=[380]$; **1353a**.

Fe.3A, cond. alone, and with HCl; **756**.

Acetic acid. $C_2H_4O_2=Me.CO_2H$.

$\alpha \times 10^8$ at 0° is less than 2; **943**. At $15^\circ=5.47$; **1844**. At 16° ; **1419**. At $18^\circ=1.2$; **1470**; also **362**, **787**, **986**, **1957**. At 20° ; **694**. At 25° is less than 2; **1388**; also **44**, **753**, **908**, **1427**, **1844**. See also **900**, **1380**.

$k_A \times 10^5$ at $0^\circ=1.77$; **1144**, **1968a**, **141**. Calculated; **1144**. At $2.6^\circ=1.8$; **387**. At $8^\circ=1.83$; **1144**. At $9.2^\circ=1.79$; **1968a**. At $10^\circ=1.81$; **875**, **1144**. At $15^\circ=1.85$; **1143**, **1144**. At $17^\circ=1.78$ aq.; **164**. At $18^\circ=1.82$; **93**, **94**, **1211**, **1332**, **1341**, **1865**; $=1.86$ in 44% Et alc.; **513**; (colorim.); **1563**. At $20^\circ=1.85$; **875**. At $25^\circ=1.86$; lowest value $=1.70$, highest $=1.89$; **44**, **295**, **1143**, **1144**, **1184**, **1368**, **1370**, **1500a**, **1539**, **1573a**, **1968**, **1968a**, **1971**; (catal.); **1043**; $=1.74$ (sapon. and cond.); **1143**; (neutralization); **463**; (colorim.); **1729b**. At $30^\circ=1.87$; **875**. At $35^\circ=1.83$; **1968a**. At $40^\circ=1.80$; **875**, **1143**, **1144**. At $50^\circ=1.74$; **1144**. At $52^\circ=1.62$; **43**, **44**. At $54.3^\circ=1.62$; **43**, **44**. At $55^\circ=1.46$ (action of diastase on starch); **2002**. At $60^\circ=1.66$ (calculated); **1144**. At $76^\circ=1.5$; **1391a**. At $100^\circ=1.114$; **1332**, **1341**. At $156^\circ=0.536$; **1332**, **1341**. At $218^\circ=0.172$; **1332**, **1341**. At $306^\circ=0.0139$; **1332**, **1341**. T not stated; (colorim.); **278**, **951**, **1643**, **1781**, **1866**; (precipitation of casein); **693**.

Cond. At 0° , $\Lambda(32)=5.3$, $(1024)=28.0$, $(\infty)=227$; **1968a**. At 25° , $\Lambda(32)=8.7$, $(1024)=46.0$, $(\infty)=364$; **1370**. At -3° to $+10^\circ$; **347**. At 0° ; **141**, **910**, **943**. At $0^\circ-35^\circ$; **1968**, **1968a**. At $8^\circ-50^\circ$; **1144**. At $10^\circ-50^\circ$; **875**. At 14° and 19° ; **838**. At 18° and 52° ; **43**. At $18^\circ-306^\circ$; **1332**, **1341**. At $35^\circ-65^\circ$; **388a**. See also **94**, **145a**, **145b**, **171**, **177**, **294**, **299**, **377**, **385**, **386**, **463**, **542**, **694**, **782**, **788**, **900**, **910**, **1094**, **1122**, **1427**, **1495**, **1518**, **1520**, **1537**, **1539**, **1569**, **1573a**, **1635**, **1747**, **1964**, **1957**.

In HBr; **30**, **147a**. No cond.; **1897**. In HCl; **30**, **147a**, **223**. Qual.; **1897**. In HCN; **943**. In HI, no cond.; **147a**. In H_2S , no cond.; **147a**, **1897**. In HNO_3 ; **223**. In H_3PO_4 ; **223**. In H_2SO_4 ; **222**, **223**, **750**. In N_2O_4 , no cond.; **602**. In SO_2 ; **1842**. In NH_3 , qual.; **606**. In *norm.*-amyl alc.; **787**, **788**. In amyl alc.; **647**. In benzene, no cond.; **1801**. In Et alc.; **513**, **647**, **754**, **782**, **787**, **788**, **1311**, **1791**, **1820**. In Me alc.; **335**, **787**, **788**. In $MeNH_2$, good cond.; **637**.

Cond. with inorg. acids; **177**, **378**, **463**, **799**, **900**, **1184**, **1495**, **1518**, **1718**, **1821**. With inorg. bases; **171**, **294**, **299**, **463**, **1341**, **1717**, **1718**. With inorg. salts; **378**, **1388**, **1470**, **1539**,

1993, 1994. With other inorg. compounds; 1163, 1386, 1495, 1518. With organic acids; 44, 93, 145b, 463, 1388, 1717, 1718, 1821. With organic bases; 44, 145a, 145b, 513, 1011, 1144, 1388. With organic salts; 94, 378, 908, 1280, 1388, 1539, 1573a, 1618a, 1809, 1993, 1994. With other organic compounds; 45, 799, 1120, 1223, 1311, 1386, 1388, 1569, 1747, 2032. Under pressure of 1 to 500 atmospheres; at 0°; 220, 1708a; at 0.1°–40°; 1708; at 14°; 542; at room temperature; 1427. As solvent; 908, 1280, 1311, 1388, 1569, 1809, (1818), 1844, 1994.

Al.3A; 1088. – NH₄A, at 15°–40°; 1143; at 18°–306°; 1332, 1341. Also 145a, 165, 463, 823. In HBr, good cond.; in PH₃, no cond.; 1645. – Ba.2A, at 0°–35°; 911. Also 1088, 1174, 1573a, 1953a. Cond. alone and with glyccoll; 1086. In NH₃, qual.; 606. – Cd.2A; 881a, 1086, 1088. With glyccoll; 1086. – Ca.2A; 1174, 1573a. In NH₃, qual.; 606. – Ce.3A; 1088. – Cr.3A; 1953a. – Co.2A, at 0°–35°; 911. Also 1086, 1088, 1573a, 1953a. With glyccoll; 1086. – Cu.2A; 377, 540, 1086, 1088, 1618a. With organic compounds; 45, 1086, 1569, 1618a. In NH₃, qual.; 606. Under pressure of 1–500 atmospheres; 1427. Also 1047. – Fe.3A; 1962. – Gl complex; 1711. – La.3A; 1088. – Pb.2A; 377, 881a, 1088, 1343, 1746, 1747. Also 1047. In NH₃, qual.; 606. With PbO; 1386. With organic compounds; 381, 1747. – Li.A; 1367. In flame; 682. – Mg.2A; 1836, 1953a. Under pressure of 1–500 atmospheres; 1427. – Mn.2A; 1086, 1088, 1737. With glyccoll; 1086. – Hg.2A; 247, 466, 1088, 1094. With Fe₂O₃; 466. With HgS; 247. 2Hg.2A in NH₃, qual.; 606. – Ni.2A, at 0°–35°; 911; also 1086, 1088. With organic compounds; 1086. Under pressure of 1–500 atmospheres; 1427. – K.A, at –21° to +7°; 793. At 35°–65°; 388a. Also 94, 164, 165, 171, 294, 299, 377, 463, 588, 955, 995, 1078, 1367. In HCl, HNO₃, H₃PO₄; 223. In H₂SO₄; 222. In NH₃, qual.; 606. In acetic acid; 94, 1280, 1809. In Me and Et alc.; 958, 1280, 1386b, 1807. In glycerol; 1279. With inorg. compounds; 379, 495. With organic compounds; 94, 381, 1280, 2032. In flame; 682. – Ag.A, at 25°–60°; 1537. Also 881a, 1111, 1174. Saturated soln.; 656. In Na.A, soln.; 1331. In NH₃, qual.; 606. – Na.A, at 0°–35°; 532, 924, 1968a. At 10°–50°; 875. At 18°–306°; 1332, 1341, 1341b. At 25°–60°; 1537. At 35°–65°; 1953a. At 18° and 52°; 43. At 89°; 1229a. At 25°, $\Lambda(32)=75.5$, (1024)=85.0; 1367, 1368a. Also 94, 372, 377, 391, 738, 810, 889, 995, 1199, 1331, 1539, 1717, 1718, 1956, 1968a. In H₂SO₄;

223, 1834. In HCl, little cond.; in PH_3 , no cond.; 1645. In NH_3 , qual.; 606. In acetic acid; 94, 908, 1280. In Me and Et alc.; 335, 391, 491, 1386b, 1390, 1470, 1807. With inorg. compounds; 796, 810, 1199, 1227. With organic compounds; 45, 94, 378, 381, 449, 908, 1280, 1539, 1746, 1747, 1994, 2032. Under pressure of 1-260 atmospheres; 542. In flame; 682. - Sr.2A; 319, 1174, 1953a. In flame; 682. - Tl.3A, in flame; 682. - UO_2 .2A cond. alone and with Na.A; 449, 1953a. - Zn.2A; 377, 1086, 1088. In NH_3 , qual.; 606. With inorg. salts; 379, 381. With organic compounds; 381, 1086, 1573a. Under pressure of 1-500 atmospheres; 1427. E. m. f.; 1047. - ZrO.2A; 1520. - Organic salts; 145a, 145b, 513, 637, 1011, 1143, 1144, 1388, 1791, 1801.

Acetic acid amide. (Acetamide). $\text{C}_2\text{H}_5\text{ON}=\text{Me}.\text{CONH}_2$.

$\alpha \times 10^4$ at $80^\circ=3.0$. At $81^\circ=2.9$; m. p. 82° ; 1843. At $100^\circ=0.43$; 1894.

$k_B \times 10^{14}$ at $25^\circ=0.31$ (catal.); 1864 and 1150. At $40.2^\circ=3.3$ (catal.); 1995. At $60^\circ=41$ (inversion); 1880 and 1150.

Cond. at 15° ; 1741. At 25° , $\Delta(32)=0.95$; 1729. Qual.; 1904.

In HBr; 33, 1646; qual.; 1897. - In HCl; 1646; qual.; 1897.

- In HI, poor cond.; in H_2S , no cond.; 1897. - In NH_3 ; 607, 610. - In MeNH_2 ; 605; qual.; 637. - In SO_2 ; 1842.

Cond. with HCl; 17, 410, 781. - With NaOH; 412, 781. With KCN and inorg. salts; 1097, 1894. As solvent; 1894.

Hg.2A at 0° ; 725. At 25° , alone and with HCl; 1094. Also 963.

- B.HCl at 25° , $\Delta(50)=369.9$. - $2\text{B}.\text{H}_2\text{SO}_4$; 1864.

Acetic acid benzylamide. (Benzylacetamide).

$\text{C}_9\text{H}_{11}\text{ON}=\text{MeCO}.\text{NH}(\text{CH}_2\text{Ph})$.

Cond. with HgCl_2 ; 1097.

Acetic acid bromoamide. (Acetbromoamide).

$\text{C}_2\text{H}_4\text{ONBr}=\text{MeCO}.\text{NH}(\text{Br})$.

$k_A \times 10^7$ at 25° , is less than 1; is dec. in aq.; m. p. 138° .

$\Delta(16)=0.15$, due to decomposition.

Na salt, $\Delta(32)=68.2$, (1024)=80.0; 757.

Acetic acid chloroamide. (Acetchloroamide).

$\text{C}_2\text{H}_4\text{ONCl}=\text{MeCO}.\text{NH}(\text{Cl})$.

Cond. at 25° is due to presence of HCl; m. p. 110° ; 757.

Acetic acid cyanoamide. (Acetylcynoamide).

$\text{C}_3\text{H}_4\text{ON}_2=\text{MeCO}.\text{NH}(\text{CN})$.

$k_A \times 10^4$ at $25^\circ=1.5$; 70. - [Quoted?]; 757.

$\Delta(24.8)=21.3$, (793.6)=102.2, (∞)=354; 70.

Na salt at 25° , $\Delta(32)=74.4$, (1024)=83.1; 270.

Acetic acid dimethyl amide. (Dimethyl-acetamide).



Cond. with HCl; 781.

Acetic acid anhydride. $\text{C}_4\text{H}_6\text{O}_3 = (\text{MeCO})_2\text{O}.$

$\kappa \times 10^4$ at $0^\circ = 1.01$; b. p. 137° – 138° ; 1843. At $20^\circ = 0.75$; 1590a.

At $25^\circ = 1.18$; b. p. 138° – 139° ; 1843; – 1844.

Cond. Showing change to acid; 1500a. As solvent; 1590a, 1844.

As solvent, under pressure; 1590a.

Acetic acid amyl ester. $\text{C}_7\text{H}_{14}\text{O}_2 = \text{MeCO}_2.\text{C}_5\text{H}_{11}.$

In HCl, in HBr and in HI, good cond.; in H_2S , no cond.; 1897.

In NH_3 , qual.; 606.

Effect of temperature on cond.; 106.

Acetic acid iso-butyl ester. $\text{C}_6\text{H}_{12}\text{O}_2 = \text{MeCO}_2.\text{iso-Bu}.$

In NH_3 , qual.; 606.

Effect of temperature on cond.; 106.

Acetic acid capryl ester. (Octyl ester). $\text{C}_{10}\text{H}_{20}\text{O}_2 = \text{MeCO}_2.\text{C}_8\text{H}_{17}.$

In NH_3 , qual.; 606.

Acetic acid ethyl ester. $\text{C}_4\text{H}_8\text{O}_2 = \text{MeCO}_2.\text{Et}.$

$\kappa \times 10^7$ at $25^\circ = 4.5$; 941, 1107. T not stated; 305.

In HBr and in HCl, qual.; 16. In NH_3 , qual.; 606.

Cond. with NaOH; 1879. With Cu oleate; 1569. With inorg. salts; 941, 1107. Effect of temperature on cond.; 106. As solvent; 1569, (1818).

Relative basicity in organic solvents; 1051.

Acetic acid glyceryl ester. (Triacetin). $\text{C}_9\text{H}_{18}\text{O}_6 = (\text{MeCO}_2)_3.\text{C}_3\text{H}_5.$

Effect of temperature on cond.; 106.

Acetic acid methyl ester. $\text{C}_3\text{H}_6\text{O}_2 = \text{MeCO}_2.\text{Me}.$

$\kappa \times 10^8$ at 25° is less than 2; b. p. 54° ; 1388.

In HBr, qual.; 16.

Cond. with HCl and acetone and glycerol; and with H_2SO_4 ; 799. With HNO_3 ; 1569. With NaOH; 1879. Effect of temperature on cond.; 106. With inorg. and organic compounds; 1388. As solvent; (38).

Acetic acid phenyl ester. $\text{C}_8\text{H}_8\text{O}_2.$

In NH_3 , qual.; 606.

Acetic acid propyl ester. $\text{C}_5\text{H}_{10}\text{O}_2.$

In NH_3 , qual.; 606.

Effect of temperature on cond.; 106.

Acetnaphthalide. $\text{C}_{12}\text{H}_{11}\text{ON}.$

In NH_3 , qual.; 606.

Aceto- see also Acetyl- and Acet-

Acetoacetic acid. $\text{C}_4\text{H}_6\text{O}_3 = \text{MeCO.CH}_2.\text{CO}_2\text{H}.$

$k_A \times 10^4 = 1.5$ (colorim.); 804.

Acetoacetic acid ethyl ester. $C_6H_{10}O_3 = MeCO.CH_2.CO_2.Et.$

$\kappa \times 10^8$ at $25^\circ = 4.0$; b. p. $174^\circ - 176^\circ$ @ 736 mm.; **941.** = 170; **1569.** Also **668.**

$k_A \times 10^9$ at $1^\circ = 1.9$; **1356.** At $25^\circ = 0.02$ (sapon.); = 4 (cond.); **662.** Also **661.** At $35^\circ = 5.4$; **1356.**

At 25° , $\Delta(32) = 0.5$, $(512) = 2.1$, $(\infty) = 360$; not very accurate; **661.** - **698, 844, 1823, 1831.**

In HBr, and in HI, good cond.; in H_2S , no cond.; **1897.** In HCN, no cond.; **943.**

Cond. In $NaOH + HCl$; **844.** - With inorg. salts; **941.** As solvent; **478, 483, 668, (941).**

Salts. Fe.A; **756.** - K.A. with $HgNO_3$; **149.**

Acetoacetic acid methyl ester. $C_5H_8O_3.$

$k_A \times 10^{11}$ at $25^\circ = 2$ (sapon.); **666, 1594.**

At 25° , $\Delta(64) = 0.26$, $(\infty) = [360]$; **698.**

 β -Aceto-iso-butyric acid. (α -Methyl-laevulinic acid).

$C_6H_{10}O_3 = MeCO.CH_2.CHMe.CO_2H.$

$k_A \times 10^5$ [at 25°] = 3.03; b. p. $153^\circ - 156^\circ$ @ 3 mm.; **202.**

 γ -Acetobutyric acid. $C_6H_{10}O_3 = MeCO.(CH_2)_3.CO_2H.$

$k_A \times 10^5$ at $25^\circ = 2.2$ aq.; b. p. 180° @ 20 mm.

$\Delta(32) = 9.9$, $(1024) = 52.1$, $(\infty) = 376$; **1588.**

Acetoguanamine. $C_4H_7N_5.$

$k_B \times 10^{11}$ at $40^\circ = 3.06$ (catal.); **1995** and **1150.** At $40.2^\circ = 2.96$ (catal.); m. p. 265° ; **1995.**

Acetol. $C_3H_6O_2 = MeCO.CH_2OH.$

Cond. with $NaOH$; b. p. $145^\circ - 146^\circ$; **975.**

Acetone. $C_3H_8O = Me.CO.Me.$

$\kappa \times 10^7$ at $-15^\circ = 0.011$; **1853a.** At $0^\circ = 3$; **922**; - also **906, 916, 918, 920.** At 13° ; **1477.** At $18^\circ = 0.2$; **478**; also **362, 487, 1056, 1070.** At $20^\circ = 1.2$; **1590a.** At $25^\circ = 1.73$; **1844.** = 2.27; **1843**; - also **334, 347, 904, 905, 906, 916, 918, 922, 941, 1388, 1569, 1830, 1847, 1853a.** At 15° to 35° ; **1477.** T not stated; **305, 336, 475, 1620.**

At 25° , $\Delta(2) = 0.017$; **1843.**

In HBr; **1646**; good cond.; **1897.** In HCN, no cond.; **943.** In HCl and HI, good cond.; in H_2S , poor cond.; **1897.** In $MeNH_2$, poor cond.; **637.**

Cond. with HCl and methyl acetate; **799.** With inorg. bases; **979, 1035.** With H_2SO_3 and Na_2SO_3 ; **1535.** With HCl qual.; **1553.** With organic acids, bases and salts; **45, 475, 922, 979, 1056, 1388, 1569, 1620, 1844, 1847, 1848, 1853a.** With HCl and benzene; **1569.** As solvent; **334, 336, (347), 474, 475, (478), 487, (748), 767a, (904), (915), (916), (918), (920), 922, (941), 1056, 1070, 1286, 1329, 1379, 1388, (1389),**

1569, 1590a, 1620, 1623, (1681), 1712, 1830, 1841, 1844, 1847, 1848, 1853a. As solvent, under pressure; 1590a.

Relative basicity in organic solvents, (colorim.); 1051.

Acetone-diacetic acid see **Hydrochelidonic acid**.

Acetone-dioxalic acid anhydride see **Chelidonic acid**.

Acetone-dicarboxylic acid. $C_5H_6O_5 = CO(CH_2CO_2H)_2$.

$k_A \times 10^4$ at $25^\circ = 7.9$ aq.; diminishes on diln.; m. p. 135° .

$\mu(21.5) = 43.1$, $(686.7) = 172.2$, $(\infty) = 354$; 23.

Acetone semicarbazone. $C_4H_8ON_3 = Me_2C:N:NH.CONH_2$.

$k_B \times 10^{12}$ at $40^\circ = 3.29$ (catal.); 1150 and 1995. At $40.2^\circ = 3.18$ (catal.); m. p. 184° ; 1995.

Acetonitrile. $C_2H_3N = Me.CN$.

$\alpha \times 10^7$ at $0^\circ = 3.195$; 1843, -39; 1844; - 482, 1845. At $25^\circ = 3.98$; 1843; = 3.8; 1849; - 482, 1423a, 1842, 1844, 1845.

At 0° , $\Lambda(32) = 0.18$; 684, 683.

In HBr; 1646; - qual.; 1897. In HCl; 33, 1646; - qual.; 1897.

In HI, poor cond.; in H_2S , good cond.; 1897. In $AsCl_3$; 1842. In NH_3 , qual.; 606.

Cond. as solvent of inorg. salts; 482, 1844, 1845. As solvent of organic compounds; 482, 767a, 936, 1423a, 1827, 1842, 1844, 1848, 1849.

Acetophenone. (Methylphenylketone). $C_8H_8O = Me.CO.Ph$.

$\alpha \times 10^7$ at $25^\circ = 1.8$; 1106, 1107; = 2.2; 1323; - 1569.

In HBr, good cond.; in H_2S , no cond.; 1897. In NH_3 , qual.; 606.

Cond. With Cu oleate; 1569. As solvent of inorg. salts; 1106, 1107, 1323. As solvent of organic compounds; 482, 1106, 1107, 1569.

p-Acetophenone-azo-diethyl-aniline.

$C_{18}H_{21}ON_3 = MeCO.C_6H_4.N_2.C_2H_5.NEt_2$.

H ion concentration = 5×10^{-5} (colorim.); m. p. $162^\circ - 163^\circ$; 1730.

p-Acetophenone-azo-diethyl-aniline oxime. $C_{18}H_{21}ON_4$.

H ion concentration is less than 5×10^{-5} (colorim.); m. p. $199^\circ - 200^\circ$; 1730.

p-Acetophenone-azo-dimethyl-aniline. $C_{16}H_{17}ON_3$.

H ion concentration is less than 5×10^{-5} (colorim.); m. p. $203^\circ - 204^\circ$; 1730.

p-Acetophenone-azo-phenylaniline. $C_{20}H_{17}ON_3$.

H ion concentration is less than 5×10^{-5} (colorim.); m. p. $184^\circ - 185^\circ$; 1730.

Acetophenone oxime. (Methylphenylketoxime).

$C_8H_9ON = Me.C(N.OH).Ph$.

$k_A \times 10^9$ at $25^\circ = 3.7$ [aq.?]; 1748. - 733.

At 25° , $\Lambda(128) = 0.24$, $(1024) = 0.68$, $(\infty) = [356]$; 1748.

β -Acetopropionic acid see **Laevulinic acid**.

Acetoxime. $C_2H_7ON=Me_2C:NOH$.

$k_A \times 10^{13}$ at $15^\circ=4.05$ (catal.). At $18^\circ=4.6$ (catal.). At $22^\circ=5.39$ (catal.). At $25^\circ=6.0$ (catal.). At $28.07^\circ=6.89$ (catal.). At $35^\circ=8.55$ (catal.). At $40^\circ=9.9$ (catal.); m. p. $59.7^\circ-60.0^\circ$; 1150.

$k_B \times 10^{13}$ at $15^\circ=2.86$ (catal.). At $18^\circ=3.7$ (catal.). At $25^\circ=6.5$ (catal.). At $35^\circ=13.0$ (catal.). At $40^\circ=19.0$ (catal.); 1150. At $40.2^\circ=17.5$ (catal.); m. p. 61° ; 1995.

At 25° , $\Lambda(32)=0.07$, $(256)=0.17$, $(\infty)=[356]$; 1748.

In NH_3 , no cond.; 604.

o-Acetoxy-benzoic acid. (Acetylsalicylic acid. Aspirin).

$k_A \times 10^4$ at $25^\circ=3.33$. $\Lambda(64)=48.4$, $(1024)=151.5$, $(\infty)=351$; 1371.

m-Acetoxy-benzoic acid. $C_9H_8O_4$.

$k_A \times 10^5$ at $25^\circ=9.86$. $\Lambda(256)=51.5$, $(1024)=95.2$, $(\infty)=351$; 1371.

p-Acetoxy-benzoic acid. $C_9H_8O_4$.

$k_A \times 10^5$ at $25^\circ=4.22$. $\Lambda(64)=17.8$, $(1024)=64.4$, $(\infty)=351$; 1371.

p-Acettoluide. $C_9H_{11}ON$.

In NH_3 , qual.; 606.

Acetyltylglycine see Acetyltyl amino-acetic acid.

Aceturic acid see Acetyl amino-acetic acid.

Acetyl- see also Acet- and Aceto-

Acetylacetone. $C_5H_8O_2 = MeCO.CH_3.COMe$.

$\alpha \times 10^7$ at $0^\circ=2.02$; 1844. At $25^\circ=2.79$; 1844; - 1569, 1843; - qual.; 1904.

$k_A \times 10^8$ at $25^\circ=4.7$ aq.; 1588; =150; 698.

At 25° , $\Lambda(32)=0.47$ $(\infty)=378$; 1588. - 844.

In Et alc. qual.; 1298.

Cond. With $NaOH$ and HCl , qual.; 844. With boric acid; 756.

With Cu oleate; 1569. As solvent; 1569, 1844.

Salts. Al_3A ; 756. - Gl_2A , $\Lambda(256)=1.5$, $(512)=1.7$; 388.

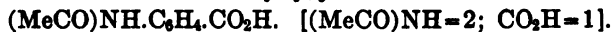
- Fe_3A . - La_3A ; 756. - Na_3A , $\Lambda(32)=82.6$, $(1024)=109.0$; 388.

Acetyl amino-acetic acid. (Aceturic acid. Acetyl glycine).

$k_A \times 10^4$ at $25^\circ=2.3$; aq. used for soln. was impure.

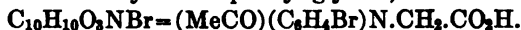
$\Lambda(32)=29.2$, $(1024)=133$, $(\infty)=355$; 1370.

Cu_2A , at 25° , $\Lambda(32)=42.7$; 1086.

o-Acetyl amino-benzoic acid. $C_9H_7O_3N =$ 

- $k_A \times 10^4$ at $25^\circ = 2.36$.
 $\Delta(128) = 55.7$, $(1024) = 135.0$, $(\infty) = 350$; **1371**.
 Na.A, at 25° , $\Delta(32) = 62.4$, $(1024) = 74.1$; **1367**.
- m-Acetyl-amino-benzoic acid.** $C_9H_9O_3N$.
 $k_A \times 10^5$ at $25^\circ = 8.5$.
 $\Delta(256) = 47.9$, $(1024) = 88.8$, $(\infty) = 350$; **1371**.
- p-Acetyl-amino-benzoic acid.** $C_9H_9O_3N$.
 $k_A \times 10^5$ at $25^\circ = 5.17$.
 $\Delta(256) = 37.9$, $(1024) = 71.8$, $(\infty) = 350$; **1371**.
- 4-Acetyl-amino-m-phthalic acid.** $C_{10}H_9O_5N =$
 $(MeCO)NH.C_6H_3(CO_2H)_2$. [$CO_2H = 1,3$; $MeCONH = 4$].
 $k_A \times 10^4$ [at 25°] = 7.9; **1914**; = 11; **1913**.
 Second $k_A \times 10^5 = 1.3$; **1913**.
 [At 25°], $\mu(2234) = 287$, $(\infty) = 375$; **1913**.
- 2-Acetyl-amino-p-phthalic acid.** $C_{10}H_9O_5N$. [$CO_2H = 1,4$].
 $k_A \times 10^4$ at $25^\circ = 9.8$; m. p. 355° . The value of k is probably too high, on account of influence of the second carboxyl group; **1684**. Quoted in **1914**.
 $\mu(600) = 197.7$, $(1200) = 248.5$, $(\infty) = 375$; **1684**.
- 2-Acetyl-amino-p-phthalic acid 4-mono methyl ester.**
 $C_{11}H_{11}O_5N$. [$CO_2H = 1$; $CO_2Me = 4$].
 $k_A \times 10^4$ [at 25°] = 7; m. p. 163° ; not entirely pure; **1684**. Quoted in **1914**.
 $\mu(700) = 187.7$, $(1400) = 229.4$, $(\infty) = 374.4$; **1684**.
- Acetylanilino-acetic acid** see **Phenylacetyl-amino-acetic acid**.
- α -Acetylanilino-butyric acid.**
 $C_{12}H_{15}O_3N = Et.CH.N(Ph)(MeCO).CO_2H$.
 $k_A \times 10^4$ at $25^\circ = 1.09$; m. p. 119° .
 $\Delta(320) = 57.8$, $(1280) = 109.6$, $(\infty) = 348$; **1840**.
- β -Acetylanilino-iso-butyric acid.**
 $C_{12}H_{15}O_3N = (Ph)(MeCO)N.CH_2.CHMe.CO_2H$.
 $k_A \times 10^5$ at $25^\circ = 2.9$; m. p. 174° .
 $\Delta(295) = 29.7$, $(1180) = 58.7$, $(\infty) = 348$; **1840**.
- α -Acetylanilino-propionic acid.**
 $C_{11}H_{13}O_3N = Me.CH.N(Ph)(MeCO).CO_2H$.
 $k_A \times 10^4$ at $25^\circ = 1.25$; m. p. 143° .
 $\Delta(128) = 41.8$, $(1024) = 105$, $(\infty) = 352$; **1840**.
- Acetyl bromide.** $C_2H_5OBr = MeCO.Br$.
 $\kappa \times 10^6$ at $0^\circ = 2.09$. At $25^\circ = 2.38$; **1843**, **1844**.
 In HBr and HCl , good cond.; in HI , no cond.; **1897**.
 Cond. as solvent of NEt_4I ; **1844**.
- Acetyl-bromoanilino-acetic acid** see **Acetyl-bromophenyl-amino-acetic acid**.

Acetyl-bromophenyl amino-acetic acid. (Acetyl-bromoanilino-acetic acid. Acetyl-bromophenyl glycine).



$k_A \times 10^4$ at $25^\circ = 2.85$; m. p. $176^\circ - 177^\circ$.

$\Lambda(300) = 89.0$, $(1200) = 156$, $(\infty) = 355$; **1840**.

Acetylcarbopyrrolic see **Methylpyrrolylketone carboxylic**.

Acetyl chloride. $\text{C}_2\text{H}_3\text{OCl} = \text{MeCO}.\text{Cl}$.

$\kappa \times 10^7$ at $0^\circ = 3.52$; **1844**. At $25^\circ = 4.21$; **1844**, **1843**.

In HBr and HCl, good cond.; in HI and H_2S , no cond.; **1897**.

In HCN, fair cond.; **943**. In SO_2 ; **1842**.

Cond. As solvent of NEt_4I ; **1844**. With allyl thiocarbimide, qual.; **1223**.

Acetylcyano- see **Cyanoaceto-** and **Cyanoacetyl-**

Acetylcyanamide see under **Acetic acid amide**.

Acetyldibromo-acrylic acid. $\text{C}_5\text{H}_4\text{O}_3\text{Br}_2 = \text{MeCOCBr}:\text{CBrCO}_2\text{H}$.

$k_A \times 10^5$ at $25^\circ = 6.2$ aq.; m. p. $78^\circ - 79^\circ$; diminishes on diln.

$\Lambda(90.3) = 25.6$, $(1444.8) = 89.1$, $(\infty) = 355$; **23**.

Acetylene. $\text{C}_2\text{H}_2 = \text{HC}:\text{CH}$.

$k_A \times 10^{10}$ at 18° is less than 1.3; **1883**.

Cond. At 0° , no cond.; **895**, **902**. Of liquid acetylene alone and with Et alc. and ether, qual.; **1234**. Qual.; **273**.

In MeNH_2 , no cond.; **637**.

Acidity shown by solubility experiments; **181**; see also **182**.

Acetylene-dicarboxylic acid. $\text{C}_4\text{H}_2\text{O}_4 = \text{CO}_2\text{H}.\text{C}:\text{C}.\text{CO}_2\text{H}$.

Second k_A too great to measure by inversion; **1638**.

At 25° , $\mu(64) = 467$, $(1024) = 721$; **1372**.

$2\text{Na}.\text{A}$ at 25° , $\Lambda(32) = 84.2$, $(1024) = 101.4$; **270**.

Acetylene tetrachloride see **Tetrachloro-ethane**.

Acetyl glycine see **Acetylamino-acetic acid**.

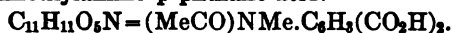
Acetylmalonic acid diethyl ester. $\text{C}_9\text{H}_{14}\text{O}_5 = \text{MeCO}.\text{CH}(\text{CO}_2\text{Et})_2$.

No cond. in aq.; **698**.

Acetylmalonic acid dimethyl ester. $\text{C}_7\text{H}_{10}\text{O}_5$.

Cond. increases on standing; at 25° , $\mu(128) = 13.7$ after 15 minutes standing; **698**.

N-Acetylmethylamino-p-phthalic acid.

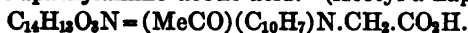


$k_A \times 10^3$ [at 25°] is less than 1.26; increase on diln. is due to the second carboxyl group; m. p. 255° .

$\mu(700) = 223.5$, $(1400) = 280.4$, $(\infty) = 374.4$; **1684**.

Acetyl- β -naphthalino-iso-butyric acid see **Acetyl- β -naphthylamino-iso-butyric acid**.

Acetyl- α -naphthylamino-acetic acid. (Acetyl- α -naphthyl glycine).



$k_A \times 10^4$ at $25^\circ = 2.07$; m. p. 156° .

$\Delta(283) = 74.7$, $(1132) = 132$, $(\infty) = 348$; **1840**.

Acetyl- β -naphthylamino-acetic acid. (Acetyl- β -naphthyl glycine).

$C_{14}H_{13}O_3N$.

$k_A \times 10^4$ at $25^\circ = 2.41$; m. p. 172° .

$\Delta(500) = 100.7$, $(1000) = 135$, $(\infty) = 348$; **1840**.

Acetyl- β -naphthylamino-iso-butyric acid. (Naphthylamino-iso-butyric acid acetyl derivative).

$C_{18}H_{17}O_3N = (MeCO)(C_{10}H_7)N.C_2H_5.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 2.2$; m. p. 188° .

$\Delta(800) = 43.0$, $(1600) = 59.4$, $(\infty) = 347$; **1840**.

Acetylphenylbutyric acid see **Phenylacetyl-butyric acid**.

Acetylphenyl glycine see **Phenyl-acetyl-amino-acetic acid**.

Acetylphenylglycine-o-carboxylic acid.

$C_{11}H_{11}O_3N = CO_2H.C_6H_4.N(COMe)(CH_2.CO_2H)$.

$k_A \times 10^3$ at $25^\circ = 1.05$; m. p. 213° , varies from 210° to 215° according to manner of heating; **1245**, **1814**.

At 25° , $\Delta(79.4) = 92.5$, $(\infty) = 373$; **1245**.

Acetylphenylglycine-o-carboxylic acid eso mono ethyl ester.

$C_{13}H_{15}O_3N = EtO_2C.C_6H_4.N(COMe)(CH_2.CO_2H)$.

$k_A \times 10^4$ at $25^\circ = 3$; m. p. 132° ; **1245**, **1814**.

$\Delta(72.3) = 51.8$, $(\infty) = 371$; **1245**.

Acetylphenylglycine-o-carboxylic acid exo mono ethyl ester.

$C_{13}H_{15}O_3N = CO_2H.C_6H_4.N(COMe)(CH_2.CO_2Et)$.

$k_A \times 10^4$ at $25^\circ = 3.8$; m. p. 87° ; **1245**, **1814**.

$\Delta(40.8) = 43.6$, $(\infty) = 371$; **1245**.

pseudo-Acetylpyrrolecarboxylic acid see **2,5-Methylpyrrolketone carboxylic acid**.

Acetylsalicylic acid see **o-Acetoxy-benzoic acid**.

Acetyl-toluidino-acetic acid see **Acetyl-tolyl amino-acetic acid**.

α -Acetyl-o-toluidinobutyric acid.

$C_{13}H_{17}O_3N = MeC_6H_4.N(MeCO).CHEt.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 9.2$; m. p. 116° .

$\Delta(290) = 52.2$, $(1160) = 97.2$, $(\infty) = 348$; **1840**.

β -Acetyl-o-toluidino-iso-butyric acid.

$C_{13}H_{17}O_3N = MeC_6H_4.N(MeCO).CH_2.CHMe.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 2.1$; m. p. 219° .

$\Delta(480) = 33.5$, $(960) = 44.6$, $(\infty) = 348$; **1840**.

α -Acetyl-p-toluidinobutyric acid. $C_{13}H_{17}O_3N$.

$k_A \times 10^4$ at $25^\circ = 1.07$; m. p. 149° .

$\Delta(300) = 56.4$, $(1200) = 105$, $(\infty) = 348$; **1840**.

α -Acetyl-p-toluidino-iso-butyric acid. $C_{13}H_{17}O_3N$.

$k_A \times 10^5$ at $25^\circ = 9.5$; m. p. 146° .

$\Delta(280) = 52.0$, $(1120) = 96.3$, $(\infty) = 348$; **1840**.

β -Acetyl-*p*-toluidino-*iso*-butyric acid. $C_{13}H_{17}O_3N$.

$k_A \times 10^5$ at $25^\circ = 2.29$; m. p. 206° .

$\Lambda(386) = 31.2$, $(1544) = 59.6$, $(\infty) = 348$; **1840**.

α -Acetyl-*o*-toluidinopropionic acid.

$C_{12}H_{15}O_3N = (MeC_6H_4)N(MeCO).CHMe.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.04$; m. p. 177° .

$\Lambda(300) = 55.7$, $(1200) = 103$, $(\infty) = 348$; **1840**.

α -Acetyl-*p*-toluidinopropionic acid. $C_{12}H_{15}O_3N$.

$k_A \times 10^4$ at $25^\circ = 1.04$; m. p. 166° .

$\Lambda(300) = 55.7$, $(1200) = 103$, $(\infty) = 348$; **1840**.

Acetyl-*o*-tolyl amino-acetic acid. (Acetyltoluidino-acetic acid. Acetyl-*o*-tolyl glycine).

$C_{11}H_{13}O_3N = (MeC_6H_4)N(MeCO).CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.19$; m. p. 210° - 212° ; **1840**; m. p. 214° ; **1245**.

$\Lambda(194) = 65.1$, $(1552) = 152.3$, $(\infty) = 352$; **1840**.

Acetyl-*p*-tolyl amino-acetic acid. (Acetyl-*p*-tolyl glycine).

$C_{11}H_{13}O_3N$.

$k_A \times 10^4$ at $25^\circ = 2.19$; m. p. 175° - 176° .

$\Lambda(200) = 66.5$, $(800) = 120$, $(\infty) = 352$; **1840**.

Acetyltolyl glycine see Acetyltolyl amino-acetic acid.

Aconitic acid. $C_6H_4O_6 = CO_2H.CH_2.C(CO_2H):CH.CO_2H$.

$k_A \times 10^3$ at $19^\circ = 1.3$ aq.; **164**. At $25^\circ = 1.36$; m. p. 180° - 183° ; **1839**. $= 1.58$; **1859**. [It is possible that the disagreement of the values of k here, is due to the fact that different aconitic acids were measured. See under Aconitine.]

Second $k_A \times 10^3 = 3.5$ (cond.); **1911**.

At 25° , $\mu(32) = 66.4$, $(1024) = 251$, $(\infty) = 353$; **1839**. $\mu(28.1) = 67.0$, $(899.2) = 249.0$, $(\infty) = 353$; **1859**. Also **172**.

Cond. with KOH; **172**.

In NH_3 , qual.; **606**.

Salts. $3Mg.2A$; **1836**. - $3K.A$; **164**, **495**. - $3Na.A$ at 25° , $\mu(32) = 81.8$, $(1024) = 109.6$; **1367**.

***pseudo*-Aconitic acid.** (*cis-trans*-Trimethylene-1,2,3-tricarboxylic acid). $C_6H_4O_6$.

$3 Na.A$ at 25° , $\mu(32) = 84.3$, $(1024) = 113.9$; **1369**.

Aconitine. $C_{23}H_{45}O_{12}N$ and $C_{24}H_{47}O_{11}N$. [The composition of aconitine from different sources varies, depending apparently, both on the species and also on the locality in which the plant grows. See Dunstan, Henry, Jour. Chem. Soc. 87, 1650, (1905). See F. O. Taylor, Jour. Indust. Eng. Chem. 1, 549, (1909), for references to recent literature on this subject.]

$k_B \times 10^3$ at $15^\circ = 3$ (hydrol.); **1779**.

In HCN, small cond.; **943**.

B.HCl at 25° , $\Lambda(32) = 72.4$, $(1024) = 83.9$; **270**.

Acridine. $C_{13}H_9N$.

B.MeI; 763.

Acridine Yellow. (2,7-Dimethyl-3,6-diamino-acridine). $C_{18}H_{15}N_3$.

B.HCl at 25° , $\Lambda(1024)=86.5$; 882.

Acrylic acid. $C_2H_4O_2=CH_2:CH.CO_2H$.

$k_A \times 10^5$ at $25^\circ=5.6$; aq. used for soln. was impure.

$\Lambda(32)=14.7$, $(1024)=73.0$, $(\infty)=360$; 1371.

Na.A at 25° , $\Lambda(32)=71.0$, $(1024)=81.7$; 1368a.

Adipic acid. $C_6H_{10}O_4=C_4H_8(CO_2H)_2$.

$k_A \times 10^5$ at $18^\circ=4.2$, (colorim.); 1563. At $25^\circ=3.65$; m. p. 147° ;

279. This acid is probably the purest that has been measured. The other measurements approximate 3.75; 1371, 1638, 1810.

Second $k_A \times 10^5=3.2$, (inversion); 1335; $=2.4$; 1638.

At 25° , $\mu(32)=11.9$, $(1024)=61.7$, $(\infty)=352$; 279.

Cond. with organic acids; 1638.

2Na.A, at 25° , $\Lambda(32)=75.7$, $(1024)=90.9$; 270.

Adipic acid anhydride. $C_6H_8O_3$.

Cond. of soln. showing change to acid; m. p. 98° ; 1810.

Adipic acid mono ethyl ester. $C_8H_{14}O_4=C_4H_8(CO_2H)(CO_2Et)$.

$k_A \times 10^5$ at $25^\circ=2.5$ (?), not perfectly pure.

$\Lambda(93.0)=17.3$, $(1488.0)=57.1$, $(\infty)=351$; 1859.

Alanine see **Aminopropionic acid**.

Alaninetoluric acid see **Methylbenzoyl amino-propionic acid**.

Alanyl-aminoacetic acid. (Alanyl glycine).

$C_5H_{10}O_3N_2=MeCH(NH_2)CO.NH.CH_2.CO_2H$.

$k_A \times 10^8$ at $25^\circ=1.8$ (catal.).

$k_B \times 10^{11}$ at $25^\circ=2$ (catal.); 519, 522.

Cond. with NH_4OH and HCl; 522.

Alanyl glycine see **Alanyl-aminoacetic acid**.

Albumin; egg albumin etc. [The references are not complete.]

α at 18° is of the order of 1×10^{-5} ; 1225. At 16° , 25° and 42° ; 2032.

Cond. in aq.; 1207, 1225a, 1258, 1289a, 1973a, 1983, 2032. See also 1393, 1394, 1395, 1396. Qual.; 1618c.

Cond. with inorg. compounds; 52a, 617a, 724a, 1137a, 1289b, 1973a, 1983. Qual.; 1618c. With organic compounds; 52a, 514a, 724a, 1289b, 2032. Cond. not affected by radium; 2031. H ion concentration; 375a, 1258b, 1259c, 1639b.

See also Blood.

2-Aldehyde-3-nitrobenzoic acid.

$C_8H_5O_5N=CHO.C_6H_3(NO_2).CO_2H$. [CHO=2; $NO_2=3$; $CO_2H=1$.]

- $k_A \times 10^6$ [at 25°]=1.3; m. p. 156° – 157° .
 $\Lambda(128)=4.8$, $(1024)=13.6$, $(\infty)=378$; 1684.
- 2-Aldehydo-5-nitrobenzoic acid.** $C_8H_5O_5N$.
 $k_A \times 10^4$ at $25^\circ=1.0$; m. p. 159° – 160° ; k diminishes on diln.
 $\Lambda(128)=40.5$, $(1024)=101.8$, $(\infty)=378$; 1684.
- Alizarin.** (1, 2-Dihydroxy-anthraquinone). $C_{14}H_8O_4=C_{14}H_6O_2(OH)_2$.
 $k_A \times 10^3$ at 18° – $19^\circ=8.8$ (colorim.); 1561, 1562.
 Resistance; 983a.
 In NH_3 , qual.; 606. – In $MeNH_2$, small cond.; 637.
- Alizarin cyanin** see Pentahydroxy-anthraquinone.
- Alkali Blue.** [Structure not given. Probably it is triphenyl-p-rosaniline mono sulphonic acid.] The purity of the compound was doubtful.
 Na salt at 90° , $\mu(200)=212.4$, $(800)=242.4$; 976a.
- Allantoin.** $C_4H_6O_2N_4$.
 $k_A \times 10^3$ at $25^\circ=1.17$ (catal.); 1996.
- Allo-** see under head of next word, e. g. *allocinnamic acid*, see under *allo-Cinnamic acid*.
- Allophanic acid amide.** (Biuret). $C_2H_5O_2N_3=NH_2.CO.NH.CO.NH_2$.
 In HCN , small cond.; 943.
 Cond. with $HgCl_2$; 1097.
- Alloxan.** $C_4H_2O_4N_2$.
 $k_A \times 10^7$ at $25^\circ=2.3$; $\mu(64)=2.2$; 1996.
 At 25° , $\mu(32)=16.6$, $(1024)=25.2$; 1748.
 Hg salt; 963.
- Alloxantine.** $C_8H_6O_8N_4$.
 At 25° , $\mu(256)=46.4$, $(1024)=45.0$; 1748.
 In NH_3 , qual.; 606.
- Allylacetic acid.** (γ , δ -Pentenoic acid).
 $C_5H_8O_2=CH_2:CH.CH_2.CH_2.CO_2H$.
 $k_A \times 10^5$ at $25^\circ=2.13$; diminishes on diln.; 571; – 564.
 $\Lambda(32)=9.9$, $(1024)=50.2$, $(\infty)=380$; 571.
 Na.A at 25° , $\Lambda(1024 - 32)=10 - 11$; 571.
- Allyl alcohol.** $C_3H_6O=CH_2:CH.CH_2.OH$.
 $\kappa \times 10^6$ at $25^\circ=6.5$; 1106, 1107.
 In HBr ; 29. In NH_3 , qual.; 606.
 Cond. with oxalic acid; 45. As solvent; 334, 1106, 1107, 1626.
- Allyl amine.** $C_3H_7N=CH_2:CH.CH_2.NH_2$.
 $k_B \times 10^6$ at $0^\circ=3.85$. At $25^\circ=4.6$; 776; $=5.7$ aq.; about 16% too high; 271. At $30^\circ=4.84$. At $35^\circ=5.00$. At $40^\circ=5.10$. At $46^\circ=5.06$; 776.
 At 25° , $\mu(32)=8.9$, $(256)=23.5$, $(\infty)=209$; 271. At 0° ; 501.
 Cond. with KCl ; 501.
 B.HCl at 25° , $\Lambda(32)=97.6$, $(1024)=109.2$; 270.

1-Allyl-4-hydroxy-3-methoxy-benzene see **Eugenol**.

Allyl iodide. $C_3H_5I = CH_2:CH.CH_2.I$.

In SO_2 , cond. is very small; b. p. 102–102.5°; **1829, 1842**.

Allylmalonic acid. $C_6H_8O_4 = CH_2:CH.CH_2.CH(CO_2H)_2$.

$k_A \times 10^3$ at 25° = 1.54; m. p. 102°.

$\mu(32) = 70.9$, (1024) = 249, (∞) = 356; **1838**.

p-Allyl phenol methyl ether see **Anethole**.

Allylpropylmalonic acid. $C_9H_{14}O_4 = CH_2:CH.CH_2.CPr(CO_2H)_2$.

$k_A \times 10^3 = 9.3$; diminishes on diln.; m. p. 115°; **828**.

$\mu(32) = 147.9$, (512) = 291, (∞) = 357; **831**.

Allyl-iso-propylmalonic acid. $C_9H_{14}O_4$.

$k_A \times 10^3 = 1.46$; diminishes on diln.; m. p. 107.5°, varies with mode of heating; 112.5° was the highest obtained; **828**.

$\mu(32) = 171.3$, (512) = 307, (∞) = 351; **831**.

Allylsuccinic acid. $C_7H_{10}O_4 = CO_2H.CH_2.CH(CH_2.CH:CH_2).CO_2H$.

$k_A \times 10^4$ at 25° = 1.09; m. p. 92°–93°.

$\mu(32) = 20.3$, (1024) = 98.4, (∞) = 353; **1838**.

Allyl thiocarbimide. (Allyl mustard oil). $C_4H_5NS = C_3H_5.NCS$.

$\alpha \times 10^8$ at 25° is less than 4.3; b. p. 150.0° @ 737.8 mm.; **939**; – 800; **1223**.

In NH_3 , qual.; **606**.

Cond. with organic compounds, and as solvent; **1223**. – **939**.

Allylthiourea. $C_4H_8N_2S$.

In NH_3 , qual.; **606**.

Allyltriethyl- see **Triethyl-allyl-**

Almond oil. [The references to this are not complete.]

α at 24°; **1010**.

Aluminum.

Complex oxalate; **1515, 1516**.

See also the following compounds.

Aluminum acetylacetonone see under salts of **Acetylacetonone**.

Aluminum bromide complexes.

$AlBr_3$ in $EtBr$; **1437**. – $AlBr_3$ in nitrobenzene; **1444a**. – $AlBr_3$ in Br , CS_2 and $CHCl_3$, no cond.; **1445**.

$AlBr_3.3C_6H_6$ and $AlBr_3.3C_7H_8$ in toluene; **1314**. – $AlBr_3.Et_2O$ in Br , CS_2 and $CHCl_3$, moderate cond.; **1445**. – $AlBr_3.C_2H_5BrCS_2$ in Br ; **1446**; in $EtBr$; **1437**. – $AlBr_3CS_2$ in Br ; **1446**.

Aluminum chloride.

Cond. in various organic compounds; **1893**.

Aminoacetic acid. (Glycine. Glycocol). $C_2H_5O_2N = NH_2.CH_2.CO_2H$.

$k_A \times 10^{10}$ at 18° = 1700 aq.; **164**. At 25° = 1.8 (hydrol.); **1150** and **1984**. = 3.4 (hydrol.); **1984** and **890**.

$k_B \times 10^{12}$ at 25° = 2.8 (hydrol.); **1984** and **890, 1150**. – (Colorim.); **1773, 1775**. At 60° = 28 (inversion); **1880** and **1150**.

At 18° , $\Lambda(100)=1.13$, $(150)=1.45$, $(\infty)=278$; **164**. At 25° , $\Lambda(16)=0.05$; **590**. Also **89**, **145b**, **1027**, **1619**, **1874**.

In NH_3 , qual.; **606**.

Cond.; alone, and saturated with CO_2 ; **145b**, **1619**. With NaOH and HCl ; **590**, **1318**. With CuSO_4 ; **88**, **89**. With Ba , Cd , Co , Cu , Mn , Ni , and Zn acetates and with HCl . Qual. with aminopropionic and piperidinoacetic acid; **1086**. With organic acids and esters, **145a**, **145b**. E. m. f.; **1639b**.

Cu.2A ; **1087**. - Hg.2A ; **1094**; also **963**. - K.A alone; with HCl ; **164**. - Na.A at 25° , $\Lambda(32)=73.6$, $(1024)=84.2$; $M(32)=76.2$, $(1024)=102.0$; **1984**. See also **1639b**. - B.HCl at 25° , $\Lambda(32)=106.4$, $(1024)=117.4$; $M(32)=183.0$, $(1024)=352.3$; **1984**; - **1864**. Effect on inversion of sugar; **1880**. - $2\text{B.H}_2\text{SO}_4$; **1864**.

Aminoacetic acid anhydride. (Diketopiperazine. Glycine anhydride). $\text{C}_4\text{H}_6\text{O}_2\text{N}_2$.

$k_B \times 10^{15}$ at $18^\circ=1.8$ [hydrol.?].

Cond. with NaOH and HCl ; **523**.

Aminoacetic acid ethyl ester. $\text{C}_4\text{H}_9\text{O}_2\text{N}=\text{NH}_2\text{CH}_2\text{CO}_2\text{Et}$.

$k_B \times 10^8$ at $15^\circ-18^\circ=9.7$ (colorim.); **1775**. At 25° , is stronger than the methyl ester; **891**. Cond. with the acid; **145a**.

Aminoacetic acid methyl ester. $\text{C}_3\text{H}_7\text{O}_2\text{N}$.

$k_B \times 10^8$ at $25^\circ=2.2$ (catal.); **890**.

Aminoazobenzene. $\text{C}_{12}\text{H}_{11}\text{N}_3=\text{Ph.N:N.C}_6\text{H}_4\text{NH}_2$.

$k_B \times 10^{12}$ at $25^\circ=9.5$ (part.); **548**. B.Acetate; **145a**.

Aminobarbituric acid. (Uramil). $\text{C}_4\text{H}_5\text{O}_3\text{N}_3$.

In NH_3 , qual.; **606**.

Aminobenzene sulphonic acid see **Aniline sulphonic acid**.

o-Aminobenzoic acid. (Anthranilic acid).

$\text{C}_7\text{H}_7\text{O}_2\text{N}=\text{NH}_2\text{C}_6\text{H}_4\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $0^\circ=0.55$. At $7.5^\circ=0.66$; **1968a**. At $15^\circ=0.865$ (sapon.); **1150**. At $17^\circ=0.99$ aq.; **164**. At $18^\circ=0.88-1.1$ (colorim.); **1563**. At $25^\circ=1.04$ (catal.); **414**; $=1.06$ (catal.); **1150**; also **855**. (Colorim.); **496**, **1773**. Electrical conductivity measurements give values of k increasing on diln. The mean for $v(64)=0.66$, $v(1024)=0.96$, $v(2048)=0.91$; **164**, **1371**, **1868**, **1968**, **1968a**, **1984**. At $35^\circ=1.25$ (sapon.); **1150**; (cond.); **1968a**. At $40^\circ=1.35$ (sapon.). At $45^\circ=1.44$ (sapon.); **1150**.

$k_B \times 10^{12}$ at $12.42^\circ=0.62$ (catal.). At $13.1^\circ=0.66$ (catal.). At $14.1^\circ=0.72$ (catal.); **1150**. At $25^\circ=1.35$ (catal.); **414**, **1150**; (part.); **548**; (hydrol.); **1984**. At $25.75^\circ=1.45$ (catal.). At $34.15^\circ=2.22$ (catal.). At $36.77^\circ=2.64$ (catal.). At $36.91^\circ=2.69$ (catal.). At $40^\circ=3.16$ (catal.); **1150**.

- Cond. At 15° to 45°; **1150**. - At 0° to 35°; **1968**. At 25°, $\Lambda(64) = 7.2$, (1024) = 33.5, (∞) = 355; **1371**. Also **170**.
 In HBr, no cond.; **30**. In NH₃, qual.; **606**.
 Cond. with KOH; **170**.
 Na.A, at 25°, $\Lambda(32) = 67.8$, (1024) = 78.5; **1984**, **1368a**, **1968a**.
 - B.HCl, at 0°; **177**. At 17°; **164**. At 25°, $\Lambda(32) = 100.2$, (1024) = 111.2; $M(32) = 194.5$, (1024) = 360.8; **1984**. - B.HNO₃; **177**.
- o-Aminobenzoic acid ethyl ester.** $C_9H_{11}O_2N = NH_2.C_6H_4.CO_2Et$.
 $k_B \times 10^{12} = 1.5$ (catal.); (B.HCl has m. p. 168°); **414**.
- o-Aminobenzoic acid methyl ester.** $C_8H_9O_2N$.
 $k_B \times 10^{12} = 1.7$ (catal.); (B.HCl has m. p. 135°); **414**.
- m-Aminobenzoic acid.** $C_7H_7O_2N = NH_2.C_6H_4.CO_2H$.
 $k_A \times 10^5$ at 17° = 0.99 aq.; **164**. At 25° = 1.63 (catal.); **414**; = 1.67 (catal.); **855**. - T not stated (colorim.); **1773**. Electrical conductivity measurements give values of k increasing on diln. after an initial diminution. The mean for $v(64) = 1.0$, $v(1024) = 1.1$; **164**, **1371**, **1868**, **1984**. See also **1374**.
 $k_B \times 10^{11}$ at 25° = 1.3 (catal.); **414**, **1984** and **1150**.
 At 25°, $\Lambda(64) = 9.4$, (1024) = 35.2, (∞) = 355; **1984**. Also **170**.
 In NH₃, qual.; **606**.
 Cond. with KOH; **170**.
 Na.A at 25°, $\Lambda(32) = 65.9$, (1024) = 75.7; **1984**, **1368a**. - B.HCl; **164**. At 25°, $\Lambda(32) = 97.4$, (1024) = 108.4; $M(32) = 128.9$, (1024) = 269.9; **1984**.
- m-Aminobenzoic acid methyl ester.** $C_8H_9O_2N = NH_2.C_6H_4.CO_2Me$.
 $k_B \times 10^{11}$ at 25° = 4.4 (catal.); **414**.
- p-Aminobenzoic acid.** $C_7H_7O_2N = NH_2.C_6H_4.CO_2H$.
 $k_A \times 10^5$ at 0° = 0.68. At 10.2° = 0.95; **1968a**. At 17° = 1.2 aq.; **164**. At 18° = 0.99 (colorim.); **1563**. At 25° = 1.2 (catal. and hydrol.); **855**, **890** and **1984**. - T not stated (colorim.); **1773**. Electrical conductivity measurements give values of k increasing on diln. The mean for $v(64) = 0.71$, $v(1024) = 1.06$, $v(2048) = 1.13$; **1371**, **1868**, **1968**, **1968a**, **1984**. At 35° = 1.2; **1968a**.
 $k_B \times 10^{12}$ at 25° = 3 (hydrol.); **1984**, **890**; = 2.3 (corrected); **1150**.
 At 25°, $\Lambda(64) = 7.5$, (1024) = 35.0, (∞) = 355; **1371**. At 0°-35°; **1968**. At 17°; **170**.
 In NH₃, qual.; **606**.
 Cond. with KOH; **170**.
 K.A; **164**. - Na.A at 25°, $\Lambda(32) = 66.5$, (1024) = 77.0; **1984**. - B.HCl; **164**, **1984**. At 25°, $\Lambda(32) = 98.7$, (1024) = 109.7; $M(32) = 170.2$, (1024) = 344.2; **1984**.

p-Aminobenzoic acid ethyl ester. $C_9H_{11}O_2N = NH_2.C_6H_4.CO_2Et.$

$k_B \times 10^{12}$ at $25^\circ = 2.88$ (catal.); m. p. 91° ; **890**.

p-Aminobenzoic acid methyl ester. $C_8H_9O_2N.$

$k_B \times 10^{12}$ at $25^\circ = 2.42$ (catal.); m. p. 112° ; **890**.

o-Aminobenzoyl-formic acid. (Isatinic acid. Isatoic acid).

$C_8H_7O_2N = NH_2.C_6H_4.CO.CO_2H.$

Na.A, with HCl, cond. on standing; **443**.

o-Aminobenzoyl-formic acid anhydride. (Isatin). $C_8H_5O_2N.$

Cond. of aq. soln. too small to measure; **733, 754**.

In pyridine, at 25° , $\mu(32) = 0.02$; **754**.

Na salt, cond. on standing; **443**.

p-Aminobenzyl sulphonic acid. $C_7H_9O_3NS = NH_2.C_6H_4.CH_2.SO_3H.$

$k_A \times 10^5$ at $25^\circ = 2.34$. $\Lambda(128) = 18.9$, $(1024) = 50.6$, $(\infty) = 355$; **492**.

γ -Aminobutyric acid. (Piperidic acid).

$C_4H_9O_2N = NH_2.(CH_2)_3.CO_2H.$

$k_A \times 10^{11}$ at $25^\circ = 3.7$ (hydrol.).

$k_B \times 10^{10}$ at $25^\circ = 1.7$ (hydrol.).

At 25° , $\Lambda(32)$ is about 0.2.

Cond. with Cu acetate.

Na.A at 25° , $M(64) = 94.8$, $(128) = 102.5$; $\Lambda(64) = 74$. - B.HCl at

25° , $M(64) = 123.1$, $(256) = 149.5$; $\Lambda(64) = 104$; **1086**.

8-Aminocaffeine. (6-Aminocaffeine. 1,3,7-Trimethyl-8-amino-2,6-dioxy-purine). $C_8H_{11}O_2N_5.$

$k_B \times 10^{13}$ at $40^\circ = 4.8$ (catal.); **1995 and 1150**.

Aminocaproic acid. (Leucine).

$C_6H_{13}O_2N = Me_2.CH.CH_2.CHNH_2.CO_2H.$

$k_A \times 10^{10}$ at $25^\circ = 1.8$ (hydrol.); **1150 and 1984**. - 3.1 (hydrol.); **1984**.

$k_B \times 10^{12}$ at $25^\circ = 2.5$ (hydrol.); **1150 and 1984**. - (Colorim.); **1775**.

In NH_3 , qual.; **606**.

Cond. with CO_2 , with inorg. and organic acids and bases, and with esters; **145a, 145b**.

$NH_4.A$; **145a**. - Na.A at 25° $\Lambda(32) = 62.4$, $(1024) = 73.4$; $M(32) = 67.8$, $(1024) = 97.6$; **1984**. - B.HCl at 25° , $\Lambda(32) = 95.4$, $(1024) = 106.4$; $M(32) = 177.9$, $(1024) = 352.5$; **1984**. - (hydrol.); **1775**. B.Acetate; **145a**.

Aminocaproic acid ethyl ester. $C_8H_{17}O_2N.$

Cond. is greater than that of the acid; **145b**. Cond. with organic acids; **145a, 145b**.

3-Amino-2-chlorobenzoic acid.

$C_7H_6O_2NCl = NH_2.C_6H_3Cl.CO_2H. [CO_2H = 1].$

$k_A \times 10^4 = 6.6$; increases on diln.; m. p. 158° .

$\Lambda(64.1) = 63.4$, $(1025.8) = 209.0$, $(\infty) = 378$; **846**.

- 3-Amino-6-chlorobenzoic acid.** $C_7H_5O_2NCl$.
 $k_A \times 10^5 = 9$; increases on diln.; m. p. 188° – 188.5° .
 $\Lambda(64) = 21.8$, $(1024) = 99.2$, $(\infty) = 378$; **79**.
- 2-Amino-4-chlorophenol.** $C_6H_4ONCl = NH_2.C_6H_3Cl.OH$. [OH = 1].
 Cond. with NaOH alone, and with HCl; **1508**, **1718**.
- 4-Amino-2-chlorophenol sulphonic acid.**
 $C_6H_4O_4NClS = (NH_2)(Cl)C_6H_3(OH)(SO_3H)$.
 $k_A \times 10^5$ at $25^\circ = 8.22$.
 $\mu(128) = 34.5$, $(1024) = 88.9$, $(\infty) = 354$; **492**.
- 2-Amino-4,6-dinitro-phenol.** (Picramic acid). $C_6H_3O_5N_3$.
 Cond. in Et alc. alone, and with NaOH; **1508**, **1718**.
- Aminoethyl-** see **Ethylamino-**
- Aminoformic acid** see **Carbamic acid**.
- d-Aminoglutaric acid.** (Amino-normal-pyrotartaric acid. d-Glutamic acid). $C_5H_9O_4N = CO_2H.(CH_2)_2.CH(NH_2).CO_2H$.
 $k_A \times 10^5$ at $25^\circ = 4.12$ (catal.); **855**. = 4.75; increases on diln.; **1838**.
 $\mu(32) = 9.6$, $(1024) = 69.6$, $(\infty) = 352$; **1838**. At 39.4° ; **145b**.
 Cond. with organic acids; **145a**.
- d-Aminoglutaric acid ethyl ester.** $C_7H_{13}O_4N$.
 Cond. with organic acids; **145a**.
- inact.-Aminoglutaric acid.** (*inact.*-Glutamic acid.) $C_5H_9O_4N$.
 $k_A \times 10^5$ at $25^\circ = 4$; increases on diln.; m. p. 198° ; **1838**, **1824**.
 $\mu(32) = 9.7$, $(1024) = 69.9$, $(\infty) = 352$; **1838**.
- Amino-hydrocinnamic acid** see **Phenyl-aminopropionic acid**.
- p-Amino-2-hydroxy-benzoic acid.** (p-Aminosalicic acid). $C_7H_7O_3N$.
 Cond. alone and with NaOH; dec. above 200° ; **1508**, **1718**.
- 3-Amino-2-hydroxy-5-sulphobenzoic acid.** (3-Amino-5-sulphosalicylic acid). $C_7H_7O_6NS$.
 Cond. alone and with NaOH; **1508**, **1718**.
- Aminoisethionic acid** see **Taurine**.
- Aminomalonic acid.** $C_2H_5O_4N = NH_2.CH(CO_2H)_2$.
 $k_A \times 10^4$ at $25^\circ = 7.7$; m. p. 108° – 109° .
 $\mu(32) = 51.9$, $(512) = 164$, $(\infty) = 357$; **1157**.
- 8-Amino-1-naphthol-3,6-disulphonic acid.**
 $C_{10}H_9O_7NS_2 = OH.C_{10}H_4(NH_2)(SO_3H)_2$.
 $k_A \times 10^5 = 7$ (colorim.); **1774**.
- 5-Amino-1-naphthol-3-sulphonic acid.**
 $C_{10}H_9O_4NS = OH.C_{10}H_5(NH_2).SO_3H$.
 $k_A \times 10^5 = 5$ (colorim.); **1774**.
- 6-Amino-1-naphthol-3-sulphonic acid.** $C_{10}H_9O_4NS$.
 $k_A \times 10^4 = 1$ (colorim.); **1774**.
- 6-Amino-2-naphthol-4-sulphonic acid.** $C_{10}H_9O_4NS$.
 $k_A \times 10^4 = 2.2$ (colorim.); **1774**.

8-Amino-1-naphthol-4-sulphonic acid. $C_{10}H_7O_4NS$.

$k_A \times 10^5 = 3.5$ (colorim.); 1774.

8-Amino-1-naphthol-5-sulphonic acid. $C_{10}H_7O_4NS$.

$k_A \times 10^4 = 1$ (colorim.); 1774.

Aminonaphthyl-naphthinduline see **Naphthalene Red**.

3-Amino-5-nitrobenzoic acid. $C_7H_5O_4N_2 = NH_2.C_6H_3(NO_2).CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.1$; increases on diln.

$\mu(83.3) = 40.4$, $(1333.3) = 144.8$, $(\infty) = 354$; 175.

2-Amino-4-nitro-diphenyl-methyl amine.

$C_{12}H_{12}O_2N_2 = Ph.NMe.C_6H_3(NO_2).NH_2$.

$k_B \times 10^{12}$ at $25^\circ = 5.0$ (part.); 583.

3-Amino-5-nitro-2-hydroxy-benzoic acid. (3-Amino-5-nitro-salicylic acid). $C_7H_5O_6N_2 = (NH_2)(NO_2)C_6H_2(OH)(CO_2H)$.

$k_A \times 10^3$ at $25^\circ = 1.33$ (neutral.).

Cond. alone and with NaOH in Et alc.; m. p. 223° ; 1508, 1718.

2-Amino-4-nitrophenol. $C_6H_5O_3N_2 = NH_2.C_6H_3(NO_2).OH$.

$k_A \times 10^7$ at $25^\circ = 2.6$.

$\mu(202.5) = 2.6$, $(810) = 5.2$, $(\infty) = 354$; 70.

Amino-nitro-salicylic acid see **Amino-nitro-hydroxy-benzoic acid**.

Aminophenazine ($C_{12}H_8N_2$) see **Phenosafraanine**.

o-Aminophenol. $C_6H_7ON = NH_2.C_6H_4.OH$.

$k_B \times 10^{10}$ at $15^\circ = 2.18$ (colorim.); 1777.

Cond. alone and with NaOH; 1508, 1718; with HCl; 1508.

In NH_3 , qual.; 606.

o-Aminophenol ethyl ether see **o-Phenetidine**.

o-Aminophenol methyl ether see **o-Anisidine**.

m-Aminophenol. C_6H_7ON .

Cond. alone and with NaOH and HCl; 1508, 1718.

p-Aminophenol. C_6H_7ON .

$k_B \times 10^9$ at $15^\circ = 6.6$ (colorim.); 1777.

Cond. alone and with NaOH and HCl; 1508, 1718.

in NH_3 , qual.; 606.

B.HCl at 25° , $\mu(50) = 94.9$. - B. H_2SO_4 ; 1864.

p-Aminophenol ethyl ether see **p-Phenetidine**.

p-Aminophenol methyl ether see **p-Anisidine**.

2-Aminophenol-4-sulphonic acid.

$C_6H_7O_4NS = NH_2.C_6H_3(OH).SO_3H$. [OH=1; $NH_2=2$;
 $SO_3H=4$].

$k_A \times 10^5$ at $25^\circ = 9.41$.

$\mu(64) = 26.5$, $(1024) = 94.3$, $(\infty) = 355$; 492.

Cond. alone and with NaOH; 1508, 1718.

4-Aminophenol-2-sulphonic acid. $C_6H_7O_4NS$.

$k_A \times 10^5$ at $25^\circ = 8.3$.

$\mu(256) = 16.0$, $(1024) = 31.3$, $(\infty) = 355$; 492

o-Aminophenyl ethyl carbonate. (Carbonic acid ethyl o-aminophenyl di-ester). $C_9H_{11}O_3N = EtO_2.CO.C_6H_4.NH_2$.

$k_B \times 10^{12}$ at $0^\circ = 9$ (hydrol.).

B.HCl; 1660.

o-Aminophenyl methyl carbonate. $C_8H_9O_3N$.

$k_B \times 10^{11}$ at $0^\circ = 1$ (hydrol.).

B.HCl at 0° , $M(32) = 78.5$, $(256) = 125.6$; $\mu(32) = 45.9$; 1660.

p-Aminophenyl ethyl carbonate. $C_9H_{11}O_3N$.

$k_B \times 10^{10}$ at $0^\circ = 2.7$ (hydrol.).

B.HCl at 0° , $M(32) = 51.0$, $(256) = 66.3$; $\mu(32) = 43.8$; 1660.

p-Aminophenyl methyl carbonate. $C_8H_9O_3N$.

$k_B \times 10^{10}$ at $0^\circ = 2.8$ (hydrol.).

B.HCl at 0° , $M(32) = 52.8$, $(256) = 67.5$; $\mu(32) = 45.9$; 1660.

2-Amino-p-phthalic acid. (Aminoterephthalic acid).

$C_8H_7O_4N = NH_2.C_6H_3(CO_2H)_2$. [$CO_2H = 1,4$; $NH_2 = 2$].

$k_A \times 10^4$ at $25^\circ = 2.65$.

$\mu(512) = 115.3$, $(1024) = 152.3$, $(\infty) = 377$; 1684.

2-Amino-p-phthalic acid 4-mono methyl ester. $C_9H_9O_4N =$

$NH_2.C_6H_3(CO_2H)(CO_2Me)$. [$CO_2H = 1$; $CO_2Me = 4$].

$k_A \times 10^6$ at $25^\circ = 5.52$; m. p. 213° .

$\mu(512) = 58.1$, $(1024) = 79.5$, $(\infty) = 376$; 1684.

?-Amino-p-phthalic acid ?-mono methyl ester. $C_9H_9O_4N$.

$k_A \times 10^4$ is about 1.5; m. p. $216^\circ - 217^\circ$ (cor.); 1915.

α -Aminopropionic acid. (α -Alanine). $C_3H_7O_2N = Me.CH(NH_2).CO_2H$.

$k_A \times 10^{10}$ at $25^\circ = 2$ (hydrol.); 1086, 1984 and 1150. - T not stated, (colorim.); 1773.

$k_B \times 10^{12}$ at $25^\circ = 3.1$ (hydrol.); 1086; $= 5.14$ (hydrol.); 1150 and 1984.

At 25° , $\Lambda(64) = 0.3$, $(1024) = 2.6$, $(\infty) = 350$; 601; - 145b, 590, 1619.

In NH_3 , qual.; 606. In SO_2 ; 1842.

Cond. of soln. saturated with CO_2 ; 145b, 1619. With organic compounds; 145a, 145b, 1086. - With inorg. compounds; 590.

Na.A at 25° , $M(32) = 70.8$, $(1024) = 99.8$; $\Lambda(32) = 68.5$; 1984;

$M(64) = 84.6$; $\Lambda(64) = 76$; 1086. - B.HCl at 25° , $M(32) =$

166.5, $(1024) = 341.3$; $\Lambda(32) = 106.5$; 1984; $M(64) = 225$;

$\Lambda(64) = 108$; 1086.

α -Aminopropionic acid ethyl ester. $C_5H_{11}O_2N$.

Cond. is greater than that of the acid; 145b.

β -Aminopropionic acid. (β -Alanine). $C_3H_7O_2N = NH_2.CH_2.CH_2.CO_2H$.

$k_A \times 10^{11}$ at $25^\circ = 7.1$ (hydrol.).

$k_B \times 10^{11}$ at $25^\circ = 5.1$ (hydrol.).

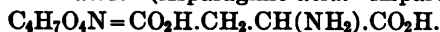
Cond. with organic compounds.

Na.A at 25°, $M(64)=90.8$, $(512)=121.4$; $\Delta(64)=76$. - B.HCl at 25°, $M(64)=141$, $(128)=158.3$; $\Delta(64)=108$; **1086**.

p-Aminosalicyclic acid see **Amino-hydroxy-benzoic acid**.

Aminosuccinamic acid see **Aminosuccinic acid mono amide**.

Aminosuccinic acid. (Asparaginic acid. Aspartic acid).



$k_A \times 10^4$ at 15.4° = 1.15 aq.; **164**. At 25° = 1.4 (catal. and hydrol.); **855**, **1150**, **1984**. Electrical conductivity measurements give mean value for $v(32)=0.67$, for $v(1024)=1.3$; **1838**, **1984** and **1673**. - (Colorim.); **1773**.

$k_B \times 10^{12}$ at 25° = 1.2 (hydrol.); **1150** and **1984**.

Cond.; **145a**, **166**, **1227**. At 25°, $\mu(32)=16.1$, $(1024)=109.4$, $(\infty)=354$; **1838**.

Cond. with inorg. acids, bases and salts; **145b**, **166**, **167**, **1164**, **1227**, **1984**. - With organic acids, esters, and salts; **44**, **145a**, **145b**, **167**.

Na.A at 25°, $\mu(32)=66.1$, $(1024)=75.9$; **1984**; also **166**, **167**, **1227**. - K.A. and 2K.A; **164**. - K.A.; **1227**. - B.HCl at 25°, $\mu(32)=97.4$, $(1024)=108.4$; $M(32)=211.9$; **1984**; **1864**. - 2B.H₂SO₄; **1864**.

Aminosuccinic acid mono amide. (Aminosuccinamic acid. Asparagine). $C_4H_8O_3N_2 = CONH_2.CH_2.CH(NH_2).CO_2H$.

$k_A \times 10^9$ at 14.8° = 0.69 (sapon.). At 15° = 0.72 (sapon.). At 18° = 0.88 (sapon.). At 25° = 1.35 (sapon.); **1150**; = 5.2 (hydrol.); **1984**; = 25; diminishes on diln. (cond.); **1838**, **1984**. At 28.1° = 1.84 (sapon.). At 35.0° = 2.40 (sapon.). At 40° = 3.15 and 3.22 (sapon.); **1150**.

$k_B \times 10^{12}$ at 15° = 0.68 (sapon.). At 15.82° = 0.74 (sapon.). At 25° = 1.53 (sapon.); **1150**. = 1.8 (hydrol.); **1984**. At 35° = 3.20 (sapon.). At 40° = 4.23 (sapon.); **1150**. At 60° = 19.0 (inversion); **1880** and **1150**.

At 25°, $\mu(32)=0.3$, $(256)=0.9$, $(\infty)=355$; **1984**; - **590**, **1838**, **1868**. Qual.; **1584**.

In HCl, no cond.; **30**. In NH₃, qual.; **606**.

Cond. with NaOH and HCl; **590**, **1318**. With KCl; **590**.

Na.A at 25°, $\mu(32)=65.3$, $(1024)=76.3$; $M(32)=66.7$, $(1024)=82.7$; **1984**. - B.HCl at 25°, $\mu(32)=98$, $(1024)=109$; $M(32)=196.3$, $(1024)=361.2$; **1984**; **1864**. Effect on inversion of sugar; **1880**. - 2B.H₂SO₄; **1864**.

2-Amino-4-sulphobenzoic acid. $C_7H_7O_5NS =$



$k_A \times 10^2$ at 25° = 3; diminishes on diln.

$\mu(150)=312.5$, $(1200)=356.4$, $(\infty)=377$; **456a**.

4-Amino-2-sulphobenzoic acid.

$C_7H_7O_5NS$. [$CO_2H=1$; $NH_2=4$; $SO_3H=2$.]

$k_A \times 10^3$ at $25^\circ=3$; diminishes on diln.

$\mu(150)=187.8$, $(1200)=302.4$, $(\infty)=377$; **456a**.

4-Amino-3-sulphobenzoic acid.

$C_7H_7O_5NS$. [$CO_2H=1$; $NH_2=4$; $SO_3H=3$.]

$k_A \times 10^3$ at $25^\circ=8$; diminishes on diln.

$\mu(150)=349.6$, $(600)=360.0$, $(\infty)=377$; **456a**.

5-Amino-2-sulphobenzoic acid.

$C_7H_7O_5NS$. [$CO_2H=1$; $NH_2=5$; $SO_3H=2$.]

$k_A \times 10^3$ at $25^\circ=6$; increases on diln.

$\mu(150)=214.5$, $(1200)=332.4$, $(\infty)=377$; **456a**.

5-Amino-3-sulphobenzoic acid.

$C_7H_7O_5NS$. [$CO_2H=1$; $NH_2=5$; $SO_3H=3$.]

$k_A \times 10^3$ at $25^\circ=2$; diminishes on diln.

$\mu(150)=165.7$, $(1200)=302.4$, $(\infty)=377$; **456a**.

Aminosulphonic acid. $NH_3O_3S=NH_2.SO_3H$. [The references to this are incomplete.]

$k_A \times 10$ at $25^\circ=1$; diminishes on diln.; m. p. about 205° ; **1557**, **1984**.

$\mu(32)=294.7$, $(1024)=363.7$, $(\infty)=371$; **1984**.

Na.A at 25° , $\mu(32)=81.5$, $(512)=91.9$, $(1024)=94.2$; **1984** - ; **1557**. - B.HCl; **1984**.

Amino-sulphosalicylic acid see **Amino-hydroxy-sulphobenzoic acid**.

5-Amino-1,2,3,4-tetrazole. (Aminotetrazolic acid. Aminotetrazotic acid). $CH_3N_5=NH_2.C.N_4H$.

$k_A \times 10^7$ at $0^\circ=3.12$. At $10^\circ=4.16$. At $18^\circ=5.4$. At $20^\circ=5.73$.

At $25^\circ=6.6$. At $30^\circ=7.44$. At $40^\circ=9.14$; **143**, and Lundén, Affinitätsmessungen, and **142**.

At 25° , $\mu(32)=1.9$, $(1024)=11.6$, $(\infty)=354$; **1720**, **142**.

In pyridine; **754**.

Na salt, at 25° , $\mu(32)=78.7$, $(1024)=93.3$; **142**, **143**, **1720**. At $0^\circ-40^\circ$; **143**.

Aminotetrazotic acid see **Aminotetrazole**.

1-Amino-1,3,4-triazole. (*iso*- or N-Dihydro-tetrazine). $C_2H_4N_4$.

$k_B \times 10^{12}$ at $25^\circ=1.77$ (sapon.); m. p. 151° ; **428**.

Amino-xylene see **Xylidine**.

Aminonchelonidonic acid. (4-Hydroxy-pyridine-2,6-dicarboxylic acid).

$C_7H_5O_5N=OH.C_5H_2N.(CO_2H)_2$.

At 25° , $\mu(170.5)=367$, $(1364)=546$; **1372**.

Ammonia. NH_3 . [The references to this are incomplete.]

α at -33° is below 1×10^{-8} ; **610**. At $-20^\circ=1.6 \times 10^{-4}$; **678**.

Ammonium hydroxide. NH_4OH . [The references to this are incomplete.]

$k_B \times 10^6$ at $0^\circ = 13.9$. At $18^\circ = 17.2$. At $25^\circ = 18.0$. At $50^\circ = 18.1$.
At $75^\circ = 16.4$. At $100^\circ = 13.5$. At $125^\circ = 10.4$. At $156^\circ = 6.28$.
At $218^\circ = 1.80$. At $306^\circ = 0.093$; 1332. - Also 165, 271, 649,
650, 776, 949, 1144, 1283, 1341, 1363.

Cond. Under pressure of 1 to 500 atmospheres; 220. - Of mixture with diacetone alcohol; 979. - See also 48 and 1631.

Amniotic fluid. [The references to this are incomplete.]

Concentration of H and OH ions; 587.

Amygdalin. $C_{20}H_{27}O_{11}N$.

In NH_3 , qual.; 606.

Amygdalinic acid see Phenylglycollic acid.

norm.-Amyl alcohol. $C_5H_{12}O = C_5H_{11}.OH$.

$\kappa \times 10^8$ at $17^\circ = 6.9$.

As solvent; 787.

iso-Amyl alcohol. (Pentyl alcohol.) $C_5H_{12}O$.

$\kappa \times 10^8$ at $17.1^\circ = 3.2$; 1900. At $18^\circ = 5$; 647, 478; also 362, 438,
and 1472. At $20^\circ = 4.3$; 1590a; 783; - 1316. At $25^\circ = 50$;
1569; - 21 and 20. - T not stated; 305.

In HBr ; 29. In NH_3 , qual.; 606.

Cond. under pressure of 100 atmospheres; 1472. Under pressure, as solvent; 1590a. With Cu oleate; 1569. As solvent; 20, 334, 438, 472, 483, 647, (783), (1477), 1569, 1590a.

iso-Amyl amine. $C_5H_{13}N = C_5H_{11}.NH_2$.

$\kappa \times 10^8$ at 25° , is less than 2; b. p. 96° ; 1388; - 942, 943.

$k_B \times 10^4$ at $25^\circ = 5$ aq.; about 16% too high; 271.

At 25° , $\mu(32) = 24.3$, $(256) = 59.1$, $(\infty) = 201$; 271; 1363.

In HCN ; 943. In NH_3 , qual.; 606.

Cond. As solvent; (942), 1388. With organic compounds; 1388.

B.HCl at 25° , $\Lambda(32) = 90.3$, $(1024) = 101.3$; 270.

Amylase.

Cond. of aq. soln.; 590.

Amyl bromide. $C_5H_{11}Br$.

$\kappa \times 10^8$ at 25° is less than 2; b. p. $118.5^\circ - 119^\circ$ @ 742 mm.; 1388.

In NH_3 , qual.; 606.

Cond. with inorg. and organic compounds; 1388.

iso-Amylbrucinium chloride. (Brucine *iso*-amylochloride).

$C_{28}H_{47}O_4N_2Cl = B.N.(C_5H_{11})Cl$.

At 25° , $\Lambda(64) = 79.8$, $(1024) = 89.8$; 270.

norm.-Amylene. C_5H_{10} .

$\kappa \times 10^8$ at 25° is less than 2; b. p. 40° @ 724 mm.; 1388.

Cond. affected by radium and X-rays; 417. With other compounds; 1388.

Amyl ether. (Diamyl ether). $C_{10}H_{22}O = (C_5H_{11})_2O$.

In NH_3 , qual.; **606**.

Amyl iodide. $C_5H_{11}I$.

$\kappa \times 10^8$ at 25° is less than 2; b. p. 127° – 128° @ 740 mm.

Cond. with inorg. and organic compounds; **1388**.

iso-Amylisethionic acid. (Hydroxy-amyl sulphonic acid).

$C_5H_{12}O_4S = C_5H_{10}(OH).SO_3H$.

$k_A \times 10^3$ is approximately 4. The acid is 97% dissociated at $v(256)$.

$\Lambda(1024-32)$ of the salts shows that the acid is monobasic; **394**.

iso-Amyl mercaptan. (Amyl sulphhydroxide). $C_5H_{12}S = C_5H_{11}SH$.

$\kappa \times 10^8$ at 25° is less than 2; b. p. 115° @ 742.8 mm.; **1388**.

In HCN, no cond.; **943**.

Cond. with inorg. salts; **149, 1388**. With organic compounds; **1388**.

Amylmethyl- see **Methylamyl-**

Amyl nitrate see **Nitric acid amyl ester**.

Amyl nitrite see **Nitrous acid amyl ester**.

Amylsulphhydrate see **iso-Amyl mercaptan**.

Amyl sulphhydroxide see **iso-Amyl mercaptan**.

Amyl thiocyanate see **Thiocyanic acid amyl ester**.

iso-Amyltriphenyl phosphonium chloride.

$C_{23}H_{28}ClP = (C_5H_{11})(Ph_3)P.Cl$.

At 25° , $\Lambda(32) = 77.1$, $(1024) = 88.5$; **270**.

Anethole. (p-Allyl phenol methyl ether). $C_{10}H_{12}O$.

In NH_3 , qual.; **606**.

Angellic acid. $C_5H_8O_2 = Me.CH:CMc.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 5.01$; **1371** and **1368**.

$\Lambda(32) = 13.9$, $(1024) = 71.9$, $(\infty) = 355$; **1371**.

Na.A at 25° , $\Lambda(32) = 66.3$, $(1024) = 76.0$; **1368a**.

Anhydroecgonine. $C_9H_{18}O_2N$.

$k_B \times 10^{11}$ at $14^\circ = 3.68$ (colorim.); **1778**.

Anil- see **Anilino-**

Anilido- see **Anilino-**

Aniline. $C_6H_7N = Ph.NH_2$.

$\kappa \times 10^8$ at 18° to $25^\circ = 1$. At $18^\circ = 0.92$; **1900, 1472**. At $20^\circ = 6$; not purified; **1316**. At 25° is less than 2; **1388**. Also **305** and **1477**.

$k_B \times 10^{10}$ at $12^\circ = 2.6$ (colorim.); **1777**. At $15^\circ = 3.1$ (hydrol.); **1143**, (colorim.); **1777**. At $18^\circ = 3.5$ (hydrol.); **436, 532**.

At $25^\circ = 5$; (hydrol.); **270, 271, 435, 660, 1043, 1116, 1143, 1150, 1293**; – (part.); **548**; – (solub.); **660, 1116 = 4.2** (colorim.); **1729b**. Electrical conductivity measurements; **269, 1241**. At $40^\circ = 7.6$ (hydrol.); **1143**, (catal.); **19** and **1150**.

At $60^\circ = 17.1$ (inversion); **1880** and **1150**.

[At 25°, $\Delta(25.6)=0.10$, $(51.2)=0.16$; 269. Also 145a, 145b.
In HCN, no cond.; 943. In HBr and HI, small cond.; in H₂S,
no cond.; 1897. In NH₃, small cond.; 610 and 606. In
benzene, no cond.; 1802, 1803.

Cond. under pressure of 100 atmospheres; 1472. Of thin layer;
301. With organic acids; 145a, 145b, 169, 513, 532, 1011,
1388, 1802, 1900. With organic bases; 1388. With Cu
oleate; 1569. With xylene; 1900. As solvent; 480, 1552a,
1569, 1900.

B.HBr, in organic solvents; 1552a. - B.HCl at 25°, $\Delta(32)=99.7$,
(1024)=147.5; 1327; $\Delta(64)=96$, (1024)=103.3; M(64)=
106.2, (1024)=144.0; 270. - 19, 165, 271, 434, 435, 734,
1143, 1659, 1791, 1864, 1880. Effect of diazotization on
cond.; 1601. - B.H₂SO₄; 1327, 1864. - B.Acetate; 44, 145a,
145b, 165, 1143, 1791, 1802, 1803, 1864. - B.Benzoate;
1802, 1803. - B.Maleate; 145a. - B.iso-Nitrosomethylpyra-
zolon; 1143. - B.Picrate; 1802. - B.Salicylate; 145a, 532.

Aniline-2,4-disulphonic acid. $C_6H_7O_6NS_2=NH_2.C_6H_3(SO_3H)_2$.

k_A is between k of m- and p-Aniline sulphonic acids, (colorim.);
1773.

o-Aniline sulphonic acid. (o-Aminobenzene sulphonic acid).

$C_6H_7O_6NS=NH_2.C_6H_4SO_3H$. [$NH_2=1$; $SO_3H=2$.]

$k_A \times 10^3$ at 25°=3.3; diminishes on diln.; 1372.

Cond.; 456a. At 25°, $\Delta(64)=130.4$, (1024)=286.9, $(\infty)=356$;
1372.

In NH₃, qual.; 606.

m-Aniline sulphonic acid. (Metanilic acid). $C_6H_7O_6NS$. [$SO_3H=3$.]

$k_A \times 10^4$ at 0°=0.90. At 12°=1.34; 1968a. At 25°=1.99;
1968a;=1.85; 1372. - (Colorim.); 1773. At 35°=2.62; 1968a.
At 25°, $\Delta(64)=36.5$, (1024)=123.5, $(\infty)=356$; 1372. $\Delta(1024)=$
125.8, $(\infty)=351$; 1968a.

In NH₃, qual.; 606.

p-Aniline sulphonic acid. (Sulphanilic acid). $C_6H_7O_6NS$. [$SO_3H=4$.]

$k_A \times 10^4$ at 0°=3.3. At 6.3°=4.0; 1968a. At 25°=6.6; 1968a,
1968;=5.9; 1984, 1372. - (Colorim.); 1773. At 35°=8.2;
1968a.

Cond. at 0° to 35°; 1968, 1968a. At 25°, $\Delta(32)=45.5$, (1024)=
188.6, $(\infty)=356$; 1372. $\Delta(1024)=193.0$, $(\infty)=351$; 1968a.
- 456a, 1984.

In NH₃, qual.; 606.

Na.A at 25°, $\Delta(32)=68.1$, (1024)=78.3; 1984; 1968a. - B.HCl
at 25°, M(32)=384; 1984.

Anilino-acetic acid see Phenylamino-acetic acid.

Anilinoacetic-acid-o-carboxylic acid see **Phenylglycine-o-carboxylic acid**.

α -Anilinobutyric acid. $C_{10}H_{13}O_2N = Et.CH(NHPh).CO_2H$.

$k_A \times 10^5$ at $25^\circ = 3.2$; m. p. 140° ; increases on diln. $\Lambda(130) = 19.8$, $(1040) = 58.4$, $(\infty) = 350$; **1840**.

α -Anilino-iso-butyric acid. $C_{10}H_{13}O_2N = Me_2C(PhNH).CO_2H$. Walden calls this an Anilinobutyric acid.

$k_A \times 10^5$ at $25^\circ = 3.9$; increases on diln.; m. p. 142° .

$\Lambda(200) = 27$, $(800) = 56.4$, $(\infty) = 350$; **1840**.

Anilino-iso-butyric acid. $C_{10}H_{13}O_2N$.

$k_A \times 10^6$ at $25^\circ = 8$; m. p. 178° – 182° ; impure?; **1840**.

β -Anilino-iso-butyric acid. $C_{10}H_{13}O_2N = (Ph)NH.CH_2.CHMe.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 1.1$; increases on diln.; m. p. 185° .

$\Lambda(200) = 4.9$, $(800) = 10.2$, $(\infty) = 350$; **1840**.

Anilinochlorooxalic acid see **Chloro-oxanilic acid**.

Anilinochlorosuccinic acid see **Chlorosuccinanilic acid**.

Anilindiabetic-o-carboxylic acid.

$C_{11}H_{11}O_6N = CO_2H.C_6H_4.N(CH_2.CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 3$; increases on diln.; m. p. 212° ; **1245**, **1817**, **1301**. $\Lambda(74.6) = 138.7$, $(596.6) = 305.4$, $(\infty) = 372$; **1245**.

Anilinfumaric acid see **Fumaranilic acid**.

Anilinoxyxylic acid see **Diamino-stilbene dicarboxylic acid**.

Anilinomalonic acid see **Malonanilic acid**.

Anilinoxalic acid see **Oxanilic acid**.

α -Anilinopropionic acid. (Phenyl- α -alanine).

$C_9H_{11}O_2N = Me.CH(NHPh).CO_2H$.

$k_A \times 10^5$ at $25^\circ = 2.2$; increases on diln.; m. p. 162° .

$\Lambda(136) = 18$, $(1088) = 50.3$, $(\infty) = 353$; **1840**.

β -Anilinopropionic acid. (Phenyl- β -alanine).

$C_9H_{11}O_2N = PhNH.(CH_2)_2.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 4.2$; increases on diln.; m. p. 59° – 60° .

$\Lambda(200) = 9.4$, $(800) = 19.8$, $(\infty) = 353$; **1840**.

Anilinosuccinic acid see **Succinanilic acid**.

Aniloantipyrine see **Anilopyrine**.

Anilopyrine. (Aniloantipyrine. 2,3-Methyl-1-phenyl-2,5-phenyliminopyrazole). $C_{17}H_{17}N_3$.

Cond. at 18° is about one half that of Benzyliminopyrine; m. p. 79° – 80° ; **1256**.

Animals. [The references to this subject are incomplete.]

Cond. of the body fluids of various animals; **250**, **253**, **634a**.

See also separate heads, as, Blood, Heart, etc.

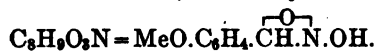
Anisaldehyde see **Anisic aldehyde**.

anti-Anisalaldoxime. (p-Methoxy-benzaldehyde *anti*-oxime).



Na.A at 0°, $\Lambda(32)=43.1$, (1024)=75.2; **635**.

Anishydroxamic acid. (4-Methoxy-benzhydroxamic acid).



$k_A \times 10^7$ [at 25°]=7.3.

$\Lambda(128)=3.6$, (512)=6.9, (∞)=[380]; **1353a**.

Anisic acid see p-Methoxy-benzoic acid.

Anisic aldehyde. (Anisaldehyde. p-Methoxy-benzaldehyde).

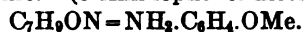


$\alpha \times 10^3$ at 0°=9; **1843, 1844, 1847**. At 20°=8.6; **1590a**. At 25°=12; **1843, 1844, 1847, 1853a** and **1569**.

In HBr and HI, good cond.; in H₂S, poor cond.; **1897**. In NH₃, qual.; **606**.

Cond. with Cu oleate; **1569**. As solvent; **1569, 1590a, 1844, 1847, 1853a**. As solvent, under pressure; **1590a**.

o-Anisidine. (o-Aminophenol methyl ether).



$k_B \times 10^{10}$ at 15°=1.9 (colorim.); **1777**.

p-Anisidine. (p-Aminophenol methyl ether). $\text{C}_7\text{H}_9\text{ON}$.

$k_B \times 10^9$ at 17°=5.7 (colorim.); **1777**. At 25°=1.47 (part.); **548**.

B.HCl, cond.; **501**. Cond. as affected by diazotization; **1601**.

Anisole. (Phenol methyl ether.) $\text{C}_7\text{H}_9\text{O}=\text{C}_6\text{H}_5.\text{OMe}$.

In HBr and HCl, good cond.; in HI and H₂S, no cond.; **1897**. In NH₃, qual.; **606**.

Cond. as solvent of AlCl₃; **1893**.

p-Anisole diazonium hydroxide. (p-Diazo anisole. p-Diazo phenol methyl ether.) $\text{C}_7\text{H}_9\text{O}_2\text{N}_2=\text{MeO.C}_6\text{H}_4.\text{N}_2.\text{OH}$.

Strong base. At 0°, $\Lambda(128)=116.3$, (∞)=135; cond. diminishes on standing.

B.Cl at 0°, $\Lambda(128)=52.0$, (256)=52.4; **501**.

B.CN. *Syn*-cyanide, m. p. 50°–51°; at 0°, $\Lambda(256)$, in alc.=1.0; in aq.=49.6. *Anti*-cyanide, m. p. 121°–122°; at 0° in alc. no cond.; **735**. – B.CN.HCN; **531**.

o-Anisole sulphinic acid. (o-Methoxy-benzene sulphinic acid).



$k_A \times 10^2$ at 25°=2.11; diminishes on diln. $\Lambda(32)=194.4$, (1024)=305.1, (∞)=353; **54**.

K.A. – Na.A at 25°, $\Lambda(32)=61.6$, (1024)=75.5; **54**.

Anisole sulphononic acid see Methoxy-benzene sulphononic acid.

Anisuric acid. $\text{C}_{10}\text{H}_{11}\text{O}_4\text{N}=\text{MeO.C}_6\text{H}_4.\text{CO.NH.CH}_2.\text{CO}_2\text{H}$.

$k_A \times 10^4$ at 25°=1.62.

$\mu(716.9)=100.8$, (1433.8)=132.9, (∞)=350; **601**.

Anthracene. $C_{14}H_{10}$.Resistance when solid and when molten; **983a**.In $MeNH_2$, no cond.; **637**. In SO_2 ; **1842**.Vapor at 200° – 250° , no cond. under diminished pressure; **859a**.**Anthranilic acid** see *o*-Aminobenzoic acid.**Anthraquinone.** $C_{14}H_8O_2$.In $MeNH_2$, no cond.; **637**.**Antimony compounds** see Tetraethyl and Tetramethyl stibonium hydroxide, and Trimethyl and Triphenyl stibine.**Antipeptone α .** (Trypsinfibrinpeptone α). $C_{10}H_{17}O_5N_3$.

Cond. in aq. soln.

Cond. with NaOH and HCl.

Na salt, $\mu(32)=72.98$, (1024)=90.8; **1318**.**Antipeptone β .** (Trypsinfibrinpeptone β). $C_{11}H_{19}O_5N_3$.

Cond. in aq. soln.

Cond. with NaOH and HCl.

Na salt, $\mu(32)=82.2$, (1024)=104.7; **1318**.**Antipyrine** see 2,3-Dimethyl-1-phenyl pyrazolone.**Apiolic acid.** $C_{10}H_{10}O_6=CH_2:O_2:C_6H(OMe)_2.CO_2H$. [OMe=2, 5; $CH_2O_2=3, 4$.] $k_A \times 10^5$ at $25^\circ=8.03$ aq.; m. p. 175° . $\mu(1320)=97.5$, (∞)=352; **23**.**Apionketonic acid** see Apionylglyoxylic acid.**Apionylglyoxylic acid.** (Apionketonic acid). $C_{11}H_{10}O_7=CH_2:O_2:C_6H(OMe)_2.CO.CO_2H$. $k_A \times 10^2$ at $25^\circ=3.35$ aq.; m. p. 160° – 172° dec. $\mu(91.2)=278.8$, (729.9)=335.3, (∞)=351; **23**.Cond. not increased by boric acid; **1186**.**Apocamphoric acid** see Camphopyric acid.**Arabinose.** $C_5H_{10}O_5$.In NH_3 , qual.; **606**.**Argenti-** see under Silver.**Argento-** see under Silver.**Arginine.** (Guanidine- α -aminovaleric acid). $C_6H_{14}O_2N_4=NH:C(NH_2).NH.(CH_2)_3.CH(NH_2).CO_2H$. $k_A \times 10^{14}$ at 25° is over 1.11 (sapon.). $k_B \times 10^7$ at 25° is less than 1.0 (sapon.).Second $k_B \times 10^{12}$ is less than 2.2.Na salt at 25° , $\mu(32)$ is about the same as that of NaOH; **948**.**Arsenic** see Cacodylic acid, Methyl arsenic acid, Tetraethyl arsonium hydroxide, Tetramethyl arsonium hydroxide, Trimethyl arsine, Triphenyl arsine.- In complex salts. With tartaric acid. $KAsC_4H_4O_6$, $\mu(25)=91.97$, (1600)=186.4; **938**.

Arum italicum. [The references to this are incomplete.]

Cond. of the fruit; **1326**.

Asparagic acid see Aminosuccinic acid.

Asparagine see Aminosuccinic acid mono amide.

Asparaginic acid see Aminosuccinic acid.

Aspartic acid see Aminosuccinic acid.

Aspirin see o-Acetoxy-benzoic acid.

Atropic acid. (α -Phenylacrylic acid.) $C_9H_8O_2=CH_2:CPh.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.43$.

$\Lambda(128) = 45.8$, $(1024) = 111.4$, $(\infty) = 352$; **1371**.

iso-Atropic acid see Truxillic acid.

Atropine. $C_{17}H_{23}O_3N$.

$k_B \times 10^7$ at 14° – 18° is over 1 (hydrol.); **1778**.

At 25° , $\mu(200) = 34.6$, $(800) = 43.7$; **1864**.

In HCN, fair cond.; **943**.

With allyl thiocarbimide, no cond.; **1223**.

Auramine. $C_{17}H_{21}N_3$.

Auramine; saturated soln. has no conductivity. Auraminium hydroxide is a strong base, changing on standing to the weak carbinol, auramine; **770**.

Auramine G. (Imino-dimethyl-diamino-di-o-tolylmethane).

$HN:C(Me.C_6H_3.NHMe)_2$.

At 25° , $\mu(1024) = 48.3$ at once, $= 35.4$ after 56 minutes; also cond. at 0° .

B.HCl at 0° , $\mu(512) = 50.3$. At 25° , $\mu(512) = 96.5$; **2006**, **770**.

Auramine O. (Imino-tetramethyl-diamino-diphenyl-methane).

$HN:C(C_6H_4.NMe_2)_2$.

At 25° , $\mu(1024) = 43.7$ at once, $= 30.8$ after 60 minutes; also cond. at 0° .

B.HCl at 0° , $\mu(512) = 77.6$. At 25° , $\mu(512) = 136.0$; **2006**.

In **2006** it is stated that Hantzsch, in a letter, wrote that the measurements of **770** may have been made with Auramine G.

Azelaic acid. $C_9H_{16}O_4 = CO_2H.(CH_2)_7.CO_2H$.

$k_A \times 10^5$ at $18^\circ = 2.6$ (colorim.); **1563**. At $25^\circ = 2.53$ aq.; m. p. 106° – 106.5° ; **1638**; $= 2.96$; **175**, **1810**.

Second $k_A \times 10^6 = 2.4$ (cond.), $= 3.3$ (part.); **370**; also **1638**, **1911**.

At 25° , $\mu(68.2) = 14.3$, $(1091) = 55.1$, $(\infty) = 350$; **1638**.

NaH.A at 25° , $\mu(32) = 68.9$, $(1024) = 85$. – 2Na.A at 25° , $\mu(32) = 75$, $(1024) = 91$; **370**.

Azelaic acid anhydride. $C_{18}H_{30}O_7$.

Cond. of aq. soln., showing change to acid; **1810**.

Azobenzene. $C_{12}H_{10}N_2 = PhN:NPh$.

In HBr, poor cond., in HI, no cond.; **1897**. In H_2S , no cond.; **27**, **1897**. In $MeNH_2$, no cond.; **637**.

Azobenzene-p-sulphonic acid. $C_{12}H_{10}O_3N_2S = Ph.N_2.C_6H_4.SO_3H$.

In pyridine at 25°, $\Delta(32) = 8.68$; in 50% pyridine, $\Delta(28) = 36.2$; 754.

Azoimide see **Hydrazoic acid**.

Azoxybenzene. $C_{12}H_{10}ON_2 = Ph.NON.Ph$.

In HBr, poor cond., in HI and H_2S , no cond.; 1897.

p-Azophenol. (4,4'-Dihydroxy-azobenzene. Quinone-p-oxyphenyl-hydrazone). $C_{12}H_{10}O_2N_2 = OH.C_6H_4.N_2.C_6H_4.OH$.

Na.A at 25°, $\mu(32) = 67.6$, (1024) = 79.7; 546.

Azophenosafrafranine see *asym.*-Phenosafrafranine.

Azotetrazole. $C_2H_2N_{10} = N_4H.C.N_2.C.N_4H$.

2Na.A at 25°, $\mu(32) = 86.8$, (1024) = 103.6; 142.

B.

Barbituric acid. (Malonyl urea). $C_4H_4O_3N_2$.

$k_A \times 10^4$ at 25° = 1.0; 1748, 1996.

$\mu(32) = 19.5$, (1024) = 97.0, (∞) = 358; 1748. - 782.

Cond. in Et alc.; 782.

Na.A at 25°, $\mu(32) = 64.5$, (1024) = 74.5. - 2Na.A at 25°, $\mu(32) = 92.0$, (1024) = 123.0; 1748.

Begonia semperflorens. [The references to this are incomplete.]

Cond. of stem; 1326.

Benzalanisal- see **Methoxy-dibenzal-**

Benzaldehyde. $C_7H_6O = Ph.CHO$.

$\alpha \times 10^7$ at 20° = 4.9; 1590a. At 25° = 1.6; 1843. = 4.5; 941; = 10; 1388.

$k_A \times 10^{16}$ at 18° is about 1.2 (hydrol.); 532.

In HBr and HI, good cond.; in H_2S , no cond.; 1897. In HCl, qual.; 16. In HCN, no cond.; 943. In NH_3 ; 607. In Et alc.; 1654. In $MeNH_2$, fair cond.; 637.

Cond. with HCl, qual.; 1553. With NaOH; 532. With KCN; 1654. As solvent; (941), 1388, 1590a, 1844. As solvent, under pressure; 1590a.

Benzalmalonic acid. $C_{10}H_8O_4 = Ph.CH:C(CO_2H)_2$.

$k_A \times 10^8$ at 25° = 4.08; 1372.

Second $k_A \times 10^6 = 3.2$ (cond.); 1911.

At 25°, $\mu(32) = 106.7$, (1024) = 294.1, (∞) = 353; 1372.

Benzalpipерonal acetone. $C_{18}H_{14}O_3$.

Comparative strength (colorim.); 1663.

Benzalpipерonal cyclopentanone. $C_{20}H_{16}O_3$.

Comparative strength (colorim.); m. p. 176°; 1663.

iso-Benzalpipерonal cyclopentanone. $C_{20}H_{16}O_3$.

Comparative strength (colorim.); m. p. 192°; 1663.

Benzamide see **Benzoic acid amide**.

Benzanilide. $C_{15}H_{11}ON$.

In NH_3 , qual.; 606.

Benzbetaine see under **Trimethyl-aminobenzoic acid**.

Benzene. C_6H_6 .

Pure, no cond.; 935, 978, 1098. $\kappa \times 10^3$ at 25° is less than 2; b. p. 79.4° – 79.5° @ 746.9 mm.; 1388; also 305, 384, 386, 872, 1010, 1830.

In HCN , no cond.; 943. In NH_3 , qual.; 606.

Cond. with organic compounds; 383, 384, 386, 935, 941, 1021, 1223, 1388, 1569, 1893. As solvent; 289, 431, (842), 935, 941, 1021, 1388, 1435, 1569, 1712, 1797, 1801, 1802, 1830, (1893). At critical point; 107, 133. As affected by long continued current; 1605. As affected by X-rays and rays from radium; 417, 872, 1491. Of thin layer; 301.

Benzeneazodibromo-phenol see **Hydroxy-dibromo-azobenzene**.

Benzeneazophenol see **p-Oxy-azobenzene**.

Benzene-1-carboxylic-acid-amide-2-methylcarboxylic acid see **Homophthalic acid 1-mono amide**.

Benzene diazonium hydroxide. (Diazo benzene).

$C_6H_5ON_2 = Ph.N_2.OH$.

$k_B \times 10^3$ at $0^\circ = 1.23$; 425, 501.

$\mu(31.9) = 24.9$, $(517) = 73.2$, $(\infty) = 139.7$; 425.

Cond. with $NaOH$; 425.

$Na.A$ at 0° , $\mu(60) = 71.2$, $(650) = 147.2$; 425. – $B.Br$, cond., and cond. with HBr at 0° ; 425. Cond. at 1° ; 730. – $B.Cl$, cond., and cond. with HCl and HI at 0° ; 425. Cond. at 1° ; 425, 730. – $B.NO_2$, cond. at 0° ; 425. At 1° ; 425, 730. – $B.CN$; 735.

Benzene sulphinic acid. $C_6H_5O_2S = Ph.SO_2H$.

$k_A \times 10^3$ at $18^\circ = 4.4$; 54. At $25^\circ = 3.5$; 54, 1134. At $30^\circ = 2.7$; 54. Diminishes on diln. in all these measurements.

At 25° , $\Lambda(34.4) = 229$, $(274.8) = 316$, $(\infty) = 356$; 1134.

Benzene sulphocyanic acid see **Benzene sulphonic acid cyanoamide**.

Benzene sulphocyanamide see **Benzene sulphonic acid cyanoamide**.

Benzene sulphonamide see **Benzene sulphonic acid amide**.

Benzene sulphone-aminoacetic acid. (Benzenesulphoneglycollic acid).

$C_6H_5O_4NS = Ph.SO_2.NH.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 3.51$; diminishes on diln.

$\Lambda(64) = 49.0$, $(1024) = 155.9$, $(\infty) = 349$.

$Na.A$ at 25° , $\Lambda(32) = 62.5$, $(1024) = 73.7$; 1134.

Benzene sulphone-aminosuccinic acid. (Benzenesulphone-aspartic acid). $C_{10}H_{11}O_6NS = Ph.SO_2.NH.C_2H_3.(CO_2H)_2$.

$k_A \times 10^4$ at $25^\circ = 7.15$; increases slightly on diln.

$\Lambda(25) = 43.2$, $(1600) = 227.2$, $(\infty) = 351$; **1134**.

Benzene sulphone-aspartic acid see **Benzene sulphone-aminosuccinic acid**.

Benzene sulphoneglycollic acid see **Benzene sulphone-aminoacetic acid**.

Benzene sulphonic acid. $C_6H_5O_3S = Ph.SO_3H$.

At 25° , $\Lambda(32) = 326$, $(1024) = 358$; **1366**.

Cond. with maleic acid; **1630**. Under varying pressures; **220**.

Li.A; **1366**. - Mg.2A; **1836**. - Na.A at 25° , $\Lambda(32) = 69.1$, $(1024) = 80.6$; **1366**; alteration of cond. by KOH; **495**. - Ag.A; **1111**.

Benzene sulphonic acid amide. (Benzene sulphamide. Benzene sulphonamide.) $C_6H_5O_2NS = Ph.SO_2NH_2$.

Cond. at 0° ; **725**. At 25° , $\Lambda(32) = 0.98$, $(1024) = 5.63$; **1576**.

In NH_3 ; **607**, **610**. In $MeNH_2$; **605**.

Cond. with HCl, and NaOH; **781**.

Benzene sulphonic acid benzoylamide. (Benzoyl benzenesulphonic amide). $C_{13}H_{11}O_3NS = Ph.SO_2.NH(CO.Ph)$.

Na.A at 25° , $\Lambda(32) = 59.7$, $(1024) = 70.1$; **781**.

Benzene sulphonic acid cyanoamide. (Benzenesulphocyanic acid. Benzene-sulphocyanamide). $C_7H_5O_2N_2S = Ph.SO_2.NH(CN)$.

$k_A \times 10^5$ at $25^\circ = 1.3$; **70**.

$\Lambda(115) = 12.7$, $(920) = 36.6$, $(\infty) = 353$; **70**. $\Lambda(128) = 337.6$; **782**.

[This difference is inexplicable.]

In Et alc.; **782**.

Benzene sulphonic acid nitroamide. (Benzene sulphonitroamide.)

$C_6H_5O_4N_2S = Ph.SO_2.NH(NO_2)$.

At 0° , $\Lambda(40) = 214.0$, $(320) = 224.9$, $(\infty) = 236.9$.

Na.A at 0° , $\Lambda(1000) = 57.3$; **143**.

p-Benzene sulphonic acid azo- β -naphthol. $C_{16}H_{12}O_4N_2S$.

2Na.A (Orange II), cond. at 18° to 90° ; **1796**, **1798**.

Cond. with H_2SO_4 ; **1798**.

Benzene sulphonitroamide see under **Benzene sulphonic acid amide**.

Benzenylphenylamino-p-tolylimidine see **Phenyl-p-tolylbenzenylamine**.

Benzhydroxamic acid. $C_7H_7O_2N = Ph\overset{\text{O}}{\text{C}}H.N.OH$.

$k_A \times 10^7$ [probably at 25°] = 7.5.

$\mu(32) = 1.82$, $(64) = 2.11$, $(\infty) = [380]$; **1353a**.

Benzdine. $C_{12}H_{12}N_2 = NH_2.C_6H_4.C_6H_4.NH_2$.

Hydrolysis value, (colorim.).

Second $k_B \times 10^{13} = 7.4$ (hydrol.); **1777**.

Benzil. $C_{14}H_{10}O_2 = Ph.CO.CO.Ph$.

In HBr, good cond.; in HI, poor cond.; 1897. In HCN, no cond.; 943. In H₂S, no cond.; 27, 1897. In MeNH₂, little cond.; 637. In NH₃, qual.; 606.

β -Benzil dioxime. C₁₄H₁₂O₂N₂.

In NH₃, qual.; 606.

Benzilic acid. (Diphenyl-glycollic acid). C₁₄H₁₂O₃=Ph₂C(OH).CO₂H.
 $k_A \times 10^4$ at 25°=9.1; m. p. 150°; 1186, 175.

$\Delta(64)=75$, (512)=170, (∞)=350; 1186.

Cond. with boric acid; 1186.

Benzimino- see Iminobenzoic-

Benzine. [This is the commercial article, a mixture of different compounds in varying amounts. The references are not complete.]

α ; 263, 931, 1206, 1556, 1605. With organic compounds; 263. As solvent of organic compounds; 931. Effect on α of long continued current; 1605.

Benzoic acid. C₇H₆O₂=Ph.CO₂H.

$k_A \times 10^5$ at 0°=6.2 aq.; diminishes slightly on diln.; 515, 1968a; increases slightly on diln.; 1018. At 15.8°=6.7; 1968a. At 17°=6.25 aq.; 164. At 18°=7.2 (colorim.); 1563. At 20°=6.64 aq.; 515. At 25°=6.6; the highest value found is 7.4, the lowest is 6.0; in almost all these measurements, k diminishes at dilutions greater than $v(1000)$; 515, 1184, 1371, 1418, 1429, 1581, 1649, 1968, 1968a; (absorption of CO₂); 139. At 30°=6.72 aq. At 35°=6.73 aq.; 515, 1968a. At 40°=6.75 aq.; 515, 1581. At 45°=6.68 aq.; 515. At 50°=6.5 aq.; 515, 1581. At 60°=6.1 aq. At 70°=5.7 aq. At 80°=5.4 aq. At 90°=4.9 aq. At 99°=4.5 aq.; 1581. T not stated;=6.3 (colorim.); 496, (colorim.); 951, 1781, (part.); 1820.

At 25°, $\Delta(64)=22.3$, (512)=59.8, (1024)=79.6, (∞)=351; 1968a.

$\Delta(64)=21.4$, (512)=57.6, (1024)=78.9, (∞)=356; 1371.

Also 168, 171, 542, 782, 838. At 0°-50°; 515, 388a.

In HBr; 30, 147a. Qual.; 1897. In HCl; 30, 147a. Qual.; 1897. In HCN, no cond.; 943. In H₂S, no cond.; 147a. In H₂SO₄; 223, 750. In N₂O₄, no cond.; 602. In NH₃, qual.; 606. In MeNH₂, good cond.; 637. In acetonitrile; 482. In alcohols; 754, 782, 1649. In benzene, no cond.; 1801. In dextrose soln.; 1649. In ether, very small cond.; 366. In piperidine and in pyridine; 754.

Cond. with boric acid; 1184. With inorg. bases; 168, 169, 171, 1017. With aniline; 169. With KCN; 1654. Under pressure of 1-260 atmospheres; 542.

Salts. NH₄A; 823. At 15°-40°; 1143. - Cs.A; 1728. - Gl com-

plex; 1712. - Li.A; 1728. In NH_3 , qual.; 606. - K.A; 1728, 164. At $35^\circ\text{--}65^\circ$; 368a. In flame; 682. - Ag.A; 848. - Na.A at 25° , $\Lambda(32)=68.7$, $(1024)=77.0$; 1368a; - also 1728, 1275, 1968a. At $0^\circ\text{--}50^\circ$; 515. At $25^\circ\text{--}99^\circ$; 1581. Under pressure of 1-260 atmospheres; 542. In flame; 682. - Rb.A; 1728. - $\text{UO}_2.2\text{A}$; 449. - Cinchonine.A, in Me alc., Et alc. and acetone; 1620.

Benzoic acid amide. (Benzamide). $\text{C}_7\text{H}_7\text{ON}=\text{Ph.CO.NH}_2$.

At 25° , $\Lambda(64)=1.3$, $(1024)=4.2$; 1729.

In NH_3 ; 610. In Et alc., small cond.; 1904. In HCN, small cond.; 943.

Cond. with NaOH; 781.

Hg.A.; 963.

Benzoic acid cyanoamide. (Benzoylcyanoamide).

$\text{C}_8\text{H}_5\text{ON}_2=\text{Ph.CO.NH(CN)}$.

$k_A \times 10^3$ at $25^\circ=2$; diminishes on diln.; m. p. 143° ; 70, 757.

$\Lambda(88)=117.0$, $(1408)=263.1$, $(\infty)=354$; 70.

In pyridine; 754.

Na.A at 25° , $\Lambda(32)=66.8$, $(1024)=75.3$; 270.

Benzoic acid anhydride. $\text{C}_{14}\text{H}_{10}\text{O}_3$.

In NH_3 , qual.; 606.

Benzoic acid esters.

Compounds of the type RR-carbinol benzoate; see under alphabetical heading of the first R; as Methylenehydride-dimethyl-amino-methyl carbinol benzoate.

Benzoic acid amyl ester. $\text{C}_{12}\text{H}_{18}\text{O}_2=\text{Ph.CO}_2\text{C}_5\text{H}_{11}$.

In NH_3 is insol.; 606.

Effect of temperature on cond.; 106.

Benzoic acid iso-butyl ester. $\text{C}_{11}\text{H}_{14}\text{O}_2$.

In NH_3 is insol.; 606.

Effect of temperature on cond.; 106.

Benzoic acid ethyl ester. $\text{C}_9\text{H}_{10}\text{O}_2=\text{Ph.CO}_2\text{Et}$.

$\kappa \times 10^7$ at $25^\circ=1.8$; 1106, 1107.

In HCl, good cond.; 1897. In HI; 1646. In NH_3 , qual.; 606. In Et alc., qual.; 1815.

Cond. in Et alc. with EtONa ; 1815. Effect of temperature on cond.; 106. As solvent; 1106, 1107.

Benzoic acid methyl ester. $\text{C}_8\text{H}_8\text{O}_2$.

In HCl, qual.; 16. In NH_3 , qual.; 606.

Effect of temperature on cond.; 106.

Benzoic acid imide see Dibenzamide.

o-Benzoic sulphinide. (Saccharin). $\text{C}_7\text{H}_5\text{O}_2\text{NS}$.

$k_A \times 10^3$ at $25^\circ=3.6$; m.p. 217° . $\Lambda(320)=228.0$, $(640)=257.3$, $(\infty)=353$; 781, (colorim.); 1773.

- In NH_3 ; **607**, **610**; qual.; **606**. In MeNH_2 , good cond.; **637**. In pyridine; **754**.
- Na.A, at 25° , $\Delta(32)=69.5$, $(1024)=80.5$; **781**.
- Benzoin**. $\text{C}_{14}\text{H}_{12}\text{O}_2=\text{Ph}.\text{CH}(\text{OH}).\text{CO}.\text{Ph}$.
In HCl and HBr , good cond.; in HI and H_2S , no cond.; **1897**.
- Benzonitrile**. $\text{C}_7\text{H}_5\text{N}=\text{Ph}.\text{CN}$.
 $\alpha \times 10^7$ at $0^\circ=33.6$; **1844**. At $20^\circ=400$; **1733**. At $25^\circ=1.7$; **1847**. $\mu=0.8$; **1323**; also **1084**, **1106**, **1107**, **1388**, **1569**, **1843**, **1844**. T not stated; **517**, **669**.
In NH_3 ; **606**.
Cond. with organic compounds and with AgNO_3 ; **1388**, **1569**.
As solvent of inorg. compounds; **1106**, **1107**, **1322**. As solvent of organic compounds; **669**, **936**, **1084**, **1388**, **1569**, **1733**, **1844**, **1847**.
- Benzophenone**. $\text{C}_{12}\text{H}_{10}\text{O}=\text{Ph}.\text{CO}.\text{Ph}$.
In HBr , HCl and HI ; **147a**. In HBr and HI , good cond.; **1897**.
In HCN , no cond.; **943**. In H_2S , no cond.; **147a**, **1897**. In MeNH_2 , very little cond.; **637**.
- Benzophenone chloride** see **Diphenyl-dichloro-methane**.
- Benzophenone oxime**. (Diphenyl-ketoxime). $\text{C}_{12}\text{H}_{11}\text{ON}$.
In MeNH_2 , little cond.; **637**.
- Benzopurpurine 4 B**. The salt of o-tolidine-disazo-binaphthylamine sulphonic acid. $\text{C}_{24}\text{H}_{26}\text{N}_6(\text{SO}_3\text{H})_2$.
 $\text{C}_{24}\text{H}_{26}\text{N}_6(\text{SO}_3\text{K})_2$.
At 18° , $\mu(200)=145.4$, $(1600)=205.2$. At 90° , $\mu(100)=434.7$, $(1600)=588.8$.
Cond. with KCl ; **976a**.
 $\text{C}_{24}\text{H}_{26}\text{N}_6(\text{SO}_3\text{Na})_2$.
Cond. before and after dialysis and filtration; **186**; also see **186a**. [The composition of the dye is not stated in **186**, but it is said to have come from Merck. In Merck's Index for 1907 the dye is said to be the sodium salt, as given here.]
- o-Benzoquinone dioxime**. $\text{C}_6\text{H}_4\text{O}_2\text{N}_2=\text{NOH}:\text{C}_6\text{H}_4:\text{NOH}$.
 $k_A \times 10^7$ at $25^\circ=1.8$.
 $\Delta(512)=3.7$, $(1024)=5.0$; **758**.
In pyridine; **754**.
Na.A at 25° , $\Delta(64)=74.4$ at once. Changes on standing to the anhydride, Phenylene-furazane; **758**.
- p-Benzoquinone**. (Quinone). $\text{C}_6\text{H}_4\text{O}_2$.
 $k_A \times 10^{13}$ at 18° is greater than 1 (hydrol.); **524**.
At 25° , $\mu(32)=0.03$ for fresh soln.; $=6.2$ after two hours standing, from formation of an acid; **547**.
Cond. with NaOH ; **524**.
In NH_3 , qual.; **606**. In MeNH_2 , fair cond.; **637**.

p-Benzoquinone chloroimide. C_6H_4ONCl .

Cond. of dil. soln. is about 0.3% that of corresponding saline chloride soln.; explodes above 85°; 318.

p-Benzoquinone monooxime. $C_6H_5O_2N$.

At 25°, $\mu(1024)=6.4$; 547. See p-Nitrosophenol.

p-Benzoquinone dioxime. (Quinone dioxime).

At 25°, $\mu(800)=0.25$.

Na.A at 25°, $\mu(32)=64.5$, (1024)=82.1; changes, on standing, to the polymeric anhydride $(C_6H_4ON_2)_x$; 547.

Benzoylactic acid ethyl ester. $C_{11}H_{12}O_3=PhCO.CH_2.CO_2Et$.

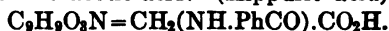
$\alpha \times 10^8$ at 0°=6.91. At 25°=9.0; b. p. 185°–186° @ 39 mm.; 1843; 1844.

Cond. as solvent of NEt_4I ; 1844.

Fe.3A at 25°, in Et alc.; m. p. 128°; 756.

Benzoylacetone. $C_{10}H_{10}O_2$.

Fe.3A, too insol. in aq. to measure; 756.

Benzoylalanine see **Benzoylamino-propionic acid.****Benzoylamino-acetic acid.** (Hippuric acid).

$k_A \times 10^4$ at 0°=2.2. At 12°=2.3; 1968a. At 25°=2.2; 1186, 1370, 1984; =2.4; 1968a. At 35°=2.3; 1968a.

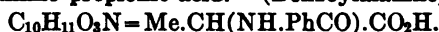
At 25°, $\Lambda(32)=28.2$, (1024)=131.1, (∞)=350; 1370.

In HBr, no cond.; in HCl, small cond.; 30. In NH_3 , qual.; 606.

In $MeNH_3$, good cond.; 637.

Cond. with boric acid; 1186. With NaOH; 1984.

Na.A at 25°, $\Lambda(32)=63.0$, (1024)=73.4; 1984; 1968a. $MeNH_3.A$, qual.; 637. Hg.A; 963. B.HCl at 25°, $M(32)=384$, (1024)=448; 1984.

Benzoylamino-propionic acid. (Benzoylalanine).

$k_A \times 10^4$ at 25°=1.97; slight diminution on diln.

$\Lambda(128)=51.3$, (1024)=124.7, (∞)=350; 601.

Benzoylamino-succinic acid. (Benzoyl-aspartic acid).

$k_A \times 10^4$ at 25°=5.31.

$\mu(64)=63.0$. (256)=114.8, (∞)=374; 1397a.

Benzoylamino-succinic acid α -mono methyl ester.

$k_A \times 10^4$ at 25°=1.93; diminishes on diln.; sinters 117°–120°, melts 123°–124°.

$\mu(32)=28.3$, (512)=98.1, (∞)=374; 1397a.

Benzoylamino-succinic acid β -mono methyl ester.

- $k_A \times 10^4$ at $25^\circ = 5$; m. p. 154° (cor.).
 $\mu(64) = 61.3$, $(512) = 147.0$, $(\infty) = 374$; **1397a**.
Benzoyl-aspartic acid see **Benzoylamino-succinic acid**.
Benzoyl benzenesulphonic amide see under **Benzene sulphonic acid amide**.
o-Benzoylbenzoic acid. $C_{14}H_{10}O_3 = PhCO.C_6H_4.CO_2H$.
 $k_A \times 10^4 = 3.8$; diminishes on diln.
 $\Lambda(1024) = 171.7$, $(2048) = 211.5$, $(\infty) = 374.5$; **1246**.
Benzoyl chloride. $C_7H_5OCl = PhCO.Cl$.
 Cond. with anisole and $AlCl_3$; **1893**.
Benzoyl cyanoamide see under **Benzoic acid amide**.
Benzoylecgonine. $C_{16}H_{19}O_4N$.
 k_B is of the order of 10^{-10} (colorim.); **1778**.
Benzoylecgonine methyl ester see **Cocaine**.
Benzoylmethyl- see **Methylbenzoyl-**.
Benzoyl peroxide. $C_{14}H_{10}O_4 = (Ph.CO)_2O_2$.
 In SO_2 , no cond.; **1842**.
 β -Benzoylpropionic acid. $C_{10}H_{10}O_3 = PhCO.CH_2.CH_2.CO_2H$.
 $k_A \times 10^5$ at $25^\circ = 2.2$; diminishes on diln.
 $\Lambda(64) = 13.3$, $(1024) = 49.3$, $(\infty) = 356$; **768**.
labile β -Benzoylpropionic acid oxime. (*anti*-Phenylketoximepropionic acid). $C_{10}H_{11}O_3N = Ph.C(N.OH).C_2H_4.CO_2H$.
 At 0° , $\Lambda(100.6) = 17.7$, $(402.4) = 27.4$; m. p. 91° ; **768**.
stable β -Benzoylpropionic acid oxime. (*syn*-Phenylketoximepropionic acid). $C_{10}H_{11}O_3N$.
 $k_A \times 10^5$ at $25^\circ = 1.7$; increases on diln., from change in soln. to the isomeric *anti*- acid; m. p. 129° .
 At 0° , $\Lambda(101.6) = 10.8$, $(406.4) = 22.8$. At 25° , $\Lambda(64) = 11.7$, $(1024) = 50.5$, $(\infty) = 355$; **768**.
Benzoylpyrrolic acid. (Benzoylpyruvic acid).
 $C_{10}H_8O_4 = Ph.CO.CH_2.CO.CO_2H$.
 $k_A \times 10^3$ at $25^\circ = 6.6$ aq.; increases on diln.; m. p. $156^\circ - 158^\circ$.
 $\Lambda(400) = 267.6$, $(1600) = 325.9$, $(\infty) = 354$; **23**.
Benzoylsarcosine see **Methylbenzoylamino-acetic acid**.
 β -Benzoyl-iso-succinic acid. $C_{11}H_{10}O_5 = PhCO.CH_2.CH(CO_2H)_2$.
 $k_A \times 10^3$ at $25^\circ = 2.5$; diminishes on diln.; m. p. $178^\circ - 179^\circ$.
 Second $k_A \times 10^7 = 4.7$ (inversion).
 At 25° , $\mu(64) = 114.5$, $(1024) = 262.4$, $(\infty) = 351$; **1638**.
Benzylacetamide see under **Acetic acid amide**.
Benzylacetic acid see **Hydrocinnamic acid**.
Benzyl alcohol. $C_7H_8O = PhCH_2.OH$.
 $\kappa \times 10^6$ at $25^\circ = 1.76$; **1106, 1107**.
 In NH_3 , qual.; **606**.
 As solvent; **334, 1106, 1107, 1580**.

Benzylalcohol-o-carboxylic acid see **o-Hydroxymethyl-benzoic acid**.

Benzyl amine. $C_7H_9N = PhCH_2.NH_2$.

$k_B \times 10^5$ at $0^\circ = 1.52$; **776**. At $25^\circ = 1.95$; **776**; -2.4 aq.; 16% too high; **271**. At $30^\circ = 2.00$. At $35^\circ = 2.18$. At $40^\circ = 2.34$. At $45^\circ = 2.33$. At $50^\circ = 2.27$. At $55^\circ = 2.23$; **776**.

At 25° , $\Lambda(32) = 5.6$, $(256) = 15.3$, $(\infty) = 201$; **271**.

With allyl thiocarbimide, no cond.; **1223**.

Relative strength by optical rotation; **1631**.

B.HCl at 25° , $\Lambda(32) = 90.7$, $(1024) = 101.4$; **270**. In SO_2 ; **1855**.

Benzyl bromide. $C_7H_7Br = PhCH_2.Br$.

In SO_2 ; **1829**; qual.; **1842**.

Benzyl-iso-butenyltricarboxylic acid. (Methylbenzylcarboxyglutaric acid.) $C_{14}H_{16}O_6 = PhCH_2.C(CO_2H)_2.CMe_2.CO_2H$.

$k_A \times 10^2$ at $25^\circ = 1.4$; m. p. 178° .

$\mu(64) = 209$, $(512) = 301$, $(\infty) = 348$; **1839**.

Benzyl chloride. $C_7H_7Cl = PhCH_2.Cl$.

In HBr, no cond.; **1897**. In SO_2 ; **1842**.

β -**Benzylcinnamic acid** see **Diphenyl-crotonic acid**.

Benzylcresotinic acid. $C_{16}H_{14}O_3 = (PhCH_2)(Me)C_6H_2(OH)(CO_2H)$.

Cond. increased by boric acid; m. p. 164° – 166° ; **1186**.

Benzyl cyanide. $C_8H_7N = PhCH_2.CN$.

$\kappa \times 10^7$ at $0^\circ = 1.10$; **1843**, **1844**. At $20^\circ = 12$; **1590a**. At $25^\circ = 1.56$; b. p. 127° @ 23–25 mm.; **1844**, **1843**.

In NH_3 , qual.; **606**.

As solvent; **1590a**, **1844**, **1853a**. As solvent, under pressure; **1590a**.

Benzyl dimethyl- see **Dimethyl-benzyl-**

Benzylethenyltricarboxylic acid.

$C_{12}H_{12}O_6 = CH_2(CO_2H).(PhCH_2)C(CO_2H)_2$.

$k_A \times 10^2$ at $25^\circ = 3.2$; m. p. 168.5° .

$\mu(32) = 217.7$, $(1024) = 342$, $(\infty) = 350$; **1839**.

Benzylethyl- see **Ethylbenzyl-**

Benzylglutaconic acid. $C_{12}H_{12}O_4 = PhCH_2.CH(CO_2H).CH:CH.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.53$; m. p. 145° .

$\mu(69) = 34.0$, $(1104) = 118.7$, $(\infty) = 353$; **1838**.

Benzylidene chloride. $C_7H_6Cl_2 = Ph.CHCl_2$.

In HBr and H_2S , no cond.; **1897**.

Benzylidene di-thioglycollic acid.

$C_{11}H_{12}O_4S_2 = PhCH:(SCH_2.CO_2H)_2$.

$k_A \times 10^4$ [probably at 25°] = 5.75; increases on diln.; m. p. 126° – 127° .

$\mu(128) = 89.1$, $(512) = 166.7$, $(\infty) = 375$; **856**.

γ -**Benzylidene- γ -phenylpyrotartaric acid.**

$C_{13}H_{16}O_4 = (Ph)(PhCH:)C.CH(CO_2H)(CH_2CO_2H)$.

$k_A \times 10^4 = 1.2$; m. p. 151° for $A.2H_2O$.

$\mu(640) = 84.5$, $(1280) = 111.5$; **1664**.

2,5-Benzyliminopyrine. (2,3-Dimethyl-1-phenyl-2,5-benzyliminopyrazole. Methylphenylbenzylaminopyrazole). $C_{18}H_{19}N_3$.

At 18° , $\Delta(20) = 157.6$, $(1000) = 154$.

B.HI; m. p. 159° ; at 18° , $\Delta(30) = 65.7$, $(1200) = 78.0$; **1256, 214**.

Benzylmalonic acid. $C_{10}H_{10}O_4 = (PhCH_2)CH(CO_2H)_2$.

$k_A \times 10^3$ at $18^\circ = 1.6$ (colorim.); **1563**. At $25^\circ = 1.51$; m. p. 117° ; **1838**.

Second $k_A \times 10^7 = 4.9$ (inversion); **1638**.

At 25° , $\mu(32) = 68.9$, $(1024) = 243$, $(\infty) = 354$; **1838**.

Benzyl mercaptan ethyl ether see **Ethylbenzyl sulphide**.

Benzylmethyl- see **Methylbenzyl-**

Benzylsuccinic acid. $C_{11}H_{12}O_4 = CO_2H.CH_2.CH(PhCH_2).CO_2H$.

$k_A \times 10^5$ at $25^\circ = 9.1$; m. p. 161° ; **201, 1838**.

$\mu(64) = 25.6$, $(512) = 67.5$, $(\infty) = 351$; **1838**.

Benzyl sulphonic acid. (Tolyl sulphonic acid).

$C_7H_6O_3S = PhCH_2.SO_3H$.

At 25° , $\Delta(32) = 340.8$, $(\infty) = 350$. k_A calculated by different formulae gives no constant value.

Na.A at 25° , $\Delta(32) = 61.5$, $(1024) = 73.2$; **423**.

Benzyltartronic acid. $C_{10}H_{10}O_5 = PhCH_2.C(OH)(CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 5.5$; m. p. 143° .

$\mu(72.5) = 163$, $(1160) = 312$, $(\infty) = 352$; **1838**.

Benzyl urethane see **Carbamic acid benzyl ester**.

Beryllium see **Glucinum**.

Betaine see **Trimethyl-aminoacetic acid**.

Bi- see also **Di-**

Bibenzyl dicarboxylic acid see **Diphenyl-succinic acid**.

Bile. [The references to this are incomplete.]

Cond.; **251**. Concentration of H and OH ions; **587**.

Biliverdic acid see **Haemitinic imide**.

Biliverdinic acid see **Haemitinic imide**.

2,2'-Bis-ethylsalicylal-acetone. $C_{21}H_{22}O_3$.

Comparative strength; m. p. 89° ; **1663**.

2,2'-Bis-ethylsalicylal cyclopentanone. $C_{23}H_{24}O_3$.

Comparative strength; m. p. 110° ; **1663**.

Bis-methylvanillal-acetone. $C_{21}H_{22}O_5$.

Comparative strength; m. p. 84° ; **1663**.

Bis-methylvanillal cyclopentanone. $C_{23}H_{24}O_5$.

Comparative strength; m. p. 195.5° ; **1663**.

Bis-nitrophenoxy-malonic acid.

$C_{15}H_{10}O_{10}N_2 = (NO_2.C_6H_4O)_2C(CO_2H)_2$.

2Na.A, $\Delta(1024-32) = 32$; **194**.

Biuret see **Allophanic acid amide**.

Blood and blood serum. [The references are incomplete.]

α at 5° to 60°; 152, 153, 156a, 251, 252, 252a, 253, 255, 257, 258, 306, 307, 310a, 310b, 376a, 445b, 451, 507a, 544, 600, 623, 626a, 783a, 836a, 878, 880, 881, 1073, 1137a, 1239a, 1239b, 1351, 1352, 1353, 1462, 1532, 1570, 1619, 1622, 1623, 1624, 1625, 1626, 1626a, 1655a, 1655b, 1655c, 1768, 1769, 1983.

Cond. With acids; 1239b. With bases; 252a, 1239b. With inorg. salts and organic compounds; 724a, 1353, 1397b, 1626a, 1655a, 1655c. With NaCl and with adrenaline; 257. With various alcohols and with acetone; 1239b, 1622, 1623, 1624, 1625, 1626. Effect of coagulation; 600. Effect of heating; 1239a, 1239b, 1462. Effect of pressure; 152, 153. Concentration of OH ions; 543, 587, 803, 835, 836, 1111a, 1258b, 1259. Concentration of H ions; 587, 803, 1111a, 1258b, 1258c, 1259, 1501a. Effect of CO₂; 1016.

Boric acid triethyl ester. C₆H₁₅O₃B=B(OEt)₃.

In HCl, good cond.; 1897.

Boric acid trimethyl ester. C₃H₉O₃B=B(OMe)₃.

$\kappa \times 10^7$ at 0°=4.9. At 25°=6.2.

As solvent of NEt₄I; 1844.

d-Borneol. C₁₀H₁₈O=C₁₀H₁₇.OH.

In HCN, no cond.; 943. In NH₃, qual.; 606.

cis-Borneolcarboxylic acid. C₁₁H₁₈O₃=C₁₀H₁₆(OH).CO₂H.

$k_A \times 10^4$ =1.05 (colorim.); m. p. 101°–102°; 274.

cis-trans-Borneolcarboxylic acid. C₁₁H₁₈O₃.

$k_A \times 10^5$ =2.55 (colorim.); m. p. 171°; 274.

Boron see **Boric acid esters**.

Brain. [The references to this are incomplete.]

Cerebrum, cond.; 156a.

Brilliant Green. (Tetraethyl-diamino-triphenyl carbinol.) C₂₇H₃₄ON₂.

The dye is a salt, usually the sulphate or a salt with zinc chloride.

$k_B \times 10^8$ is less than 5.3 (colorim.); 1614.

Free base at 0°, μ (256)=24.3 at once; changes, on standing, to the pseudobase which has no cond.

B.H₂SO₄, at 25°, Δ (128)=173.7; also cond. at 0°; 770.

Brom- see **Bromo-**

Bromal hydrate. C₂HOBBr₃(=CBr₃.CHO) + H₂O=C₂H₃O₂Br₃.

In NH₃, qual.; 606.

p-Bromo-acetanilide. (Acet-p-bromo-anilide).

C₈H₈ONBr=C₆H₄Br.NH(MeCO).

In MeNH₂, little cond.; 637.

Bromoacetic acid. C₂H₃O₂Br=CH₂Br.CO₂H.

$k_A \times 10^8$ at 0°=1.56 aq.; decreases on diln.; 1018. At 18°=1.46

or 1.30 depending on value of $\Lambda(\infty)$ used; **460**. At $25^\circ = 1.38$; slight decrease on diln.; **1370**. T not stated (colorim.); **951**.

At 25° , $\Lambda(32) = 68.7$, $(1024) = 241.2$, $(\infty) = 362$; **1370**.

In HBr, good cond.; in HCl and HI, small cond.; in H_2S , no cond.; **1897**. In NH_3 , qual.; **606**. In Et alc.; **647**, **782**, **1820**.

Na.A at 25° , $\Lambda(32) = 72.0$, $(1024) = 83.8$; **270**.

Bromoacetyl-anilinoacetic acid see **Bromoacetyl-phenyl aminoacetic acid**.

Bromoacetyl bromide. $C_2H_5OBr_2 = CH_2Br.COBr$.

$\kappa \times 10^7$ at $0^\circ = 7.25$; b. p. $146^\circ - 147^\circ$.

In SO_2 ; **1842**.

Bromoacetyl-phenyl amino-acetic acid. (Bromoacetyl-anilinoacetic acid. Bromoacetyl-phenyl glycine).

$C_{10}H_{10}O_3NBr = Ph.N(CH_2Br.CO).CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 3.4$; diminishes on diln.; m. p. 152° .

$\Lambda(200) = 81.4$, $(1600) = 180$, $(\infty) = 355$; **1840**.

Bromoacetyl-phenyl glycine see **Bromoacetyl-phenyl amino-acetic acid**.

Bromoaminobenzene see **Bromoaniline**.

Bromoanilic acid. (2,5-Dihydroxy-3,6-dibromo-p-benzoquinone).

$C_6H_2O_4Br_2 = (OH)_2C_6Br_2O_2$.

$\mu(192) = 493.5$, $(1536) = 658.1$, $(\infty) = 871$; **577**. Quoted in **389**.

At 25° , $\Lambda(128) = 201.4$, $(1024) = 293.0$; **1275**.

2Na.A, $\mu(192) = 217.3$; **577**. - Na.A, at 25° , $\Lambda(32) = 126$, $(1024) = 288$. - 2Na.A, $\Lambda(32) = 77.0$, $(1024) = 87.1$; **1275**. - K.A; **577**.

m-Bromoaniline. (Bromoaminobenzene).

$C_6H_6NBr = Br.C_6H_4.NH_2$. [$NH_2 = 1$.]

$k_B \times 10^{11}$ at $19^\circ = 9.5$ (colorim.); **1777**. At $25^\circ = 3.82$ (part.); **584**.

p-Bromoaniline. C_6H_6NBr .

$k_B \times 10^{10}$ at $18^\circ = 2.07$ (colorim.); **1777**. At $25^\circ = 1.0$ (part.); **548**, **584**.

Cond. after diazotization; **1601**.

2-Bromoaniline-5-sulphonic acid.

$C_6H_4O_3NBrS = Br.C_6H_3(NH_2).SO_3H$. [$NH_2 = 1$; $Br = 2$; $SO_3H = 5$.]

$k_A \times 10^2$ at $25^\circ = 1.49$; impure, k diminishes on diln.

$\Lambda(73.5) = 224.4$, $(1176) = 312.6$, $(\infty) = 354$; **1372**.

4-Bromoaniline-2-sulphonic acid.

$C_6H_4O_3NBrS$. [$NH_2 = 1$; $Br = 4$; $SO_3H = 2$.]

$k_A \times 10^2$ at $25^\circ = 1.7$; diminishes on diln.

$\Lambda(219) = 294$, $(1652) = 322$, $(\infty) = 354$; **1372**.

4-Bromoaniline-3-sulphonic acid.

$C_6H_5O_2NBrS$. [$NH_2=1$; $Br=4$; $SO_3H=3$.]

$k_A \times 10^4$ at $25^\circ=7.2$; diminishes on diln.

$\Lambda(64)=70.0$, $(1024)=197.5$, $(\infty)=354$; **1372**.

Bromobenzene. C_6H_5Br .

$\kappa \times 10^5$ at $18^\circ=9.9$; **386**.

In HBr and H_2S , no cond.; **1897**. In NH_3 , qual.; **606**. In $MeNH_2$, no cond.; **637**.

Cond. with carvene and chloroform; **386**.

p-Bromobenzene diazonium syn-cyanide. (p-Bromodiazobenzene cyanide). $C_7H_4N_2Br=C_6H_4Br.N_2.CN$.

Cond. in Et alc.; m. p. 43° ; **735**.

p-Bromobenzene diazonium hydroxide. (p-Bromodiazobenzene).

$C_6H_5ON_2Br=C_6H_4Br.N_2.OH$.

$k_B \times 10^4$ at $0^\circ=1.5$. $\Lambda(128)=17.9$, $(1024)=47$, $(\infty)=135$; **501**.

$B.Br$; **730**. - $B.Cl$ cond. with KCN ; **735**. - $B.CN$; **735**. - $B.NO_2$; **730**. *anti*-K.A; **774**.

o-Bromobenzoic acid. $C_7H_5O_2Br=Br.C_6H_4.CO_2H$.

$k_A \times 10^3$ at $18^\circ=1.35$ (colorim.); **1563**. At $25^\circ=1.45$; diminishes on diln.; **1371**.

At 25° , $\Lambda(128)=124.5$, $(1024)=242.2$, $(\infty)=356$; **1371**.

K.A; **1728**. - Na.A at 25° , $\Lambda(64)=66.1$, $(128)=68.0$; **1728**; $\Lambda(1024)=75.0$; **1581**.

m-Bromobenzoic acid. $C_7H_5O_2Br$.

$k_A \times 10^4$ at $18^\circ=1.4$ (colorim.); m. p. $153^\circ-154^\circ$; **1563**. At $25^\circ=1.37$; **1371**.

At 25° , $\Lambda(512)=82.6$, $(1024)=110.7$, $(\infty)=356$; **1371**.

In NH_3 , qual.; **606**.

Na.A at 25° , $\Lambda(32)=67.2$, $(1024)=77.2$; **1368a**. At 25° to 99° ; **1581**.

p-Bromobenzoic acid. $C_7H_5O_2Br$.

$k_A \times 10^5$ at $25^\circ=6.6$ (solub.); **1116**. Too insol. in aq. to measure cond.; **1371**.

Cs.A. - K.A. - Na.A at 25° , $\Lambda(64)=65.1$, $(128)=67.1$. - Rb.A; **1728**.

 α -Bromobutyric acid. $C_4H_7O_2Br=Et.CHBr.CO_2H$.

$k_A \times 10^3$ at $25^\circ=1.06$. $\Lambda(128)=109$, $(1024)=218$, $(\infty)=355$; **1840**. In SO_2 ; **1842**.

 α -Bromobutyric acid ethyl ester. $C_6H_{11}O_2Br$.

In SO_2 , no cond.; **1842**.

 γ -Bromobutyric acid. $C_4H_7O_2Br=CH_2Br.CH_2.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ=2.62$; m. p. $32^\circ-33^\circ$; **1099** and **1908**. $\Lambda(32)=10.9$, $(64)=15.1$, $(\infty)=356$; **1099**.

α -Bromobutyryl bromide. $C_4H_8OBr_2 = Et.CHBr.COBr$.

In SO_2 ; 1842. [Walden gives the formula for the normal Bromobutyryl bromide; but calls it the *iso* compound. No b. p. is given.]

α -Bromo-*iso*-butyryl bromide. $C_4H_8OBr_2 = Me_2.CBr.COBr$.

In $AsCl_3$ and in SO_2 ; b. p. 161° – 163° ; 1842.

***o*-Bromocamphor sulphonic acid.** (d- α -Bromocamphor- π -sulphonic acid.) $C_{10}H_{16}O_4BrS$.

At 25° , $\mu(30) = 329$, $(\infty) = 355$; 1841.

In acetone; 1841. In SO_2 , no cond.; 1842.

Cond. with quinidine; 1841.

Ba.2A. – Gl.2A. – K.A. – Na.A at 25° , $\mu(30) = 65.5$, (960) = 76.0. – Tl.A. – Zn.2A. – Quinidine.A.; 1841.

Bromocamphorsulphonic chloride. $C_{10}H_{14}O_3ClBrS$.

In SO_2 ; 1842.

β -Bromocarmin. (Bromocarminic acid). $C_{11}H_5O_4Br_3$.

2Na.A at 25° , $\Delta(32) = 76.7$, (1024) = 87.3; 1275.

Bromocarminic acid see **Bromocarmin.**

α -Bromocinnamic acid. $C_9H_7O_2Br = PhCH:CH.CO_2H$. (β - acid).

$k_A \times 10^4$ at $25^\circ = 9.3$. $\Delta(441) = 165.0$, (1764) = 246.2, $(\infty) = 352$; 1371.

β -Bromocinnamic acid. $C_9H_7O_2Br = PhCBr:CH.CO_2H$. (α - acid).

$k_A \times 10^2$ at $25^\circ = 1.44$; 1371; = 1.3 aq.; 1581. At $40^\circ = 0.96$ aq.

At $50^\circ = 0.79$ aq. At $60^\circ = 0.65$ aq. At $70^\circ = 0.53$ aq. At $80^\circ = 0.44$ aq. At $90^\circ = 0.36$ aq. At $99^\circ = 0.29$ aq.; 1581.

At 25° , $\Delta(111) = 246$, (888) = 329, $(\infty) = 352$; 1371.

Bromocitraconic acid. $C_6H_5O_4Br = CO_2H.C(CH_2Br):CH(CO_2H)?$

$k_A \times 10^3$ at $25^\circ = 1.49$ aq.; diminishes on diln.; m. p. of the anhydride is 100° – 101° .

$\mu(107) = 247.3$, (856) = 325, $(\infty) = 355$; 23.

Bromocitraconic acid anhydride. $C_6H_5O_3Br$.

Cond. of soln. in aq. showing change to acid; 23.

Bromodehydracetic acid. $C_3H_5O_4Br$.

Too insol. to get cond.; m. p. 136° – 137° ; 558.

Bromo-diamino-*p*-sulphotolulc acid see **Bromo-2,6-toluylenediamine-4-sulphonic acid.**

***p*-Bromodiazobenzene** see ***p*-Bromobenzene diazonium hydroxide.**

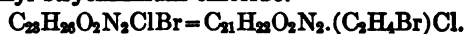
2-(β)-Bromoethyl amine. $C_2H_5NBr = C_2H_4Br.NH_2$.

B.HBr at 25° , $\Delta(32) = 98.0$, (1024) = 109.7; 270.

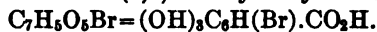
Bromoethyl brucinium chloride.

$C_{25}H_{30}O_4N_2ClBr = C_{23}H_{28}O_4N_2.(C_2H_4Br)Cl$.

At 25° , $\Delta(32) = 75.1$, (1024) = 91.5; 270.

Bromoethyl strychninium chloride.

At 25°, $\Delta(32) = 78.6$, $(1024) = 90.8$; **270**.

Bromoform see Tribromo-methane.**Bromogallic acid.** (3,4,5-Trihydroxy-2-bromobenzoic acid).

$k_A \times 10^4$ at 25° = 5.91. $\mu(64) = 62.4$, $(1024) = 188.0$, $(\infty) = 352$; **1371**.

Bromomaleic acid. $\text{C}_4\text{H}_3\text{O}_4\text{Br} = \text{CO}_2\text{H}\cdot\text{CBr}\cdot\text{CH}\cdot\text{CO}_2\text{H}.$

At 25°, $\mu(32) = 263$, $(1024) = 355$; **1372**.

Bromomethyl- see Methylbromo-**1-(α)-Bromonaphthalene.** $\text{C}_{10}\text{H}_7\text{Br}.$

In SO_2 , no cond.; **1829**, **1842**.

Bromonitro- see Nitrobromo-**Bromophenylacetyl- see Acetyl-bromophenyl-****p-Bromophenyl-cyanourea.** $\text{C}_8\text{H}_6\text{ON}_3\text{Br} = \text{Br}\cdot\text{C}_6\text{H}_4\text{NH}\cdot\text{CO}\cdot\text{NH}(\text{CN}).$

$k_A \times 10^4$ at 25° = 2 (cond. and colorim.).

$\Delta(2048) = 188.4$, $(\infty) = 378$; dec. above 325°; **214a**.

1-p-Bromophenyl-5-hydroxy-1,2,3-triazole-4-carboxylic acid ethyl ester. $\text{C}_{11}\text{H}_{10}\text{O}_3\text{N}_3\text{Br}.$

$k_A \times 10^2$ at 25° = 2; m. p. 138.5° slowly heated.

$\mu(420.3) = 335$, $(1681.2) = 359.9$, $(\infty) = 371$; **448**.

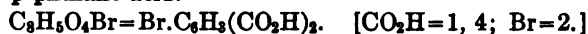
norm.-p-Bromophenyl-nitromethane.

At 0°, $\mu(2780) = 2.5$, probably due to absorption of CO_2 ; m. p. 60°; **775**.

iso-p-Bromophenyl-nitromethane. $\text{C}_7\text{H}_6\text{O}_2\text{NBr}.$

At 0°, $\mu(388) = 23.2$; m. p. 89°–90°.

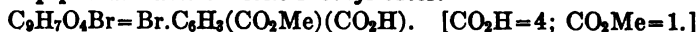
Na.A at 25°, $\mu(32) = 73.6$, $(128) = 79.9$; also cond. with HCl ; **775**.

2-Bromo-p-phthalic acid.

$k_A \times 10^3$ at 25° = 6.2; **1909**.

Second $k_A \times 10^5 = 7.6$; **1911**.

At 25°, $\mu(254.8) = 263.3$, $(1020) = 359.5$, $(\infty) = 377$; **1909**.

2-Bromo-p-phthalic acid 1-mono methyl ester.

$k_A \times 10^4$ at 25° = 3.7; diminishes on diln.; m. p. 145°; **1909**, **1930**.

$\mu(471.4) = 127.8$, $(1888) = 207.3$, $(\infty) = 376$; **1909**.

2-Bromo-p-phthalic acid 4-mono methyl ester.

$k_A \times 10^3$ at 25° = 5.0; diminishes on diln.; m. p. 164°; **1909**, **1930**.

$\mu(260) = 249.6$, $(1041) = 316.9$, $(\infty) = 376$; **1909**.

 α -Bromopropionic acid. $\text{C}_3\text{H}_5\text{O}_2\text{Br} = \text{Me}\cdot\text{CHBr}\cdot\text{CO}_2\text{H}.$

$k_A \times 10^3$ at 25° = 1.08; m. p. 15°–20°.

- $\Lambda(128)=110.4$, $(1024)=225$, $(\infty)=358$; **1840**.
In SO_2 ; **1842**. In NH_3 , qual.; **606**.
- β -Bromopropionic acid.** $\text{C}_3\text{H}_5\text{O}_2\text{Br}=\text{CH}_2\text{Br}.\text{CH}_2.\text{CO}_2\text{H}$.
 $k_A \times 10^5$ at $25^\circ=9.8$; diminishes slightly on diln.; m. p. 62.5° .
 $\Lambda(32)=19.5$, $(1024)=95.3$, $(\infty)=358$; **1840**.
In NH_3 , qual.; **606**.
- Bromopyrotartaric acid.** $\text{C}_8\text{H}_7\text{O}_4\text{Br}=\text{C}_6\text{H}_5\text{Br}(\text{CO}_2\text{H})_2$.
 $k_A \times 10^5$ at $25^\circ=4.78$; m. p. 204° ; **1838**.
Second $k_A \times 10^5=5.1$ (cond.); **1911**.
At 25° , $\mu(64)=150$, $(1024)=322$, $(\infty)=356$; **1838**.
- (ω) -1²-Bromostyrolene.** $\text{C}_8\text{H}_7\text{Br}=\text{Ph}.\text{CH}:\text{CHBr}$.
In SO_2 , no cond.; **1829**, **1842**.
- inact.-Bromosuccinic acid.** $\text{C}_4\text{H}_5\text{O}_4\text{Br}=\text{CO}_2\text{H}.\text{CH}_2.\text{CHBr}.\text{CO}_2\text{H}$.
 $k_A \times 10^5$ at $25^\circ=2.7$; m. p. 160° - 161° ; **1824**, **1838**.
Second $k_A \times 10^5=3.9$ (cond.); **1911**.
At 25° , $\mu(32)=91.5$, $(1024)=294$, $(\infty)=356$; **1838**.
- l-Bromosuccinic acid.** $\text{C}_4\text{H}_5\text{O}_4\text{Br}$.
 $k_A \times 10^5$ at $25^\circ=2.7$; m. p. 172° ; **1824**.
Second $k_A \times 10^5=2.5$ (part.); $=3.9$ (cond.); **370**.
In SO_2 , is insol.; **1842**.
 NaH.A. ; **370**. - 2Na.A at 25° , $\Lambda(32)=81.7$, $(1024)=99.4$; **270**;
- **370**.
- Bromotetric acid.** $\text{C}_6\text{H}_5\text{O}_3\text{Br}=\text{Me}.\text{CBr}.\text{C}_6\text{H}_4\text{O}_3$.
 $k_A \times 10^5$ at $25^\circ=1$; diminishes on diln.; m. p. 75° - 77° .
 $\mu(640)=27$, $(1280)=34.9$, $(\infty)=356$; **1831**.
- 3-Bromo-2-toluidine-5-sulphonic acid.**
 $\text{C}_7\text{H}_5\text{O}_3\text{NBrS}=(\text{Br})(\text{NH}_2).\text{C}_6\text{H}_3(\text{Me})(\text{SO}_3\text{H})$. [Me=1;
 $\text{NH}_2=2$; Br=3; $\text{SO}_3\text{H}=5$.]
 $k_A \times 10$ at $25^\circ=1$; diminishes on diln.
 $\Lambda(32)=283.3$, $(1024)=333.1$, $(\infty)=354$; **492**. [In **492** this is
given as Me=1; $\text{NH}_2=2$; Br=5; $\text{SO}_3\text{H}=3$.]
- ?-Bromo-2-toluidine-?-sulphonic acid.**
 $\text{C}_7\text{H}_5\text{O}_3\text{NBrS}$. [In **492** given as,
Me=1; $\text{NH}_2=2$; $\text{SO}_3\text{H}=4$.]
 $k_A \times 10^5$ at 25° is about 1.4; diminishes on diln.
 $\Lambda(256)=159.2$, $(1024)=213.3$, $(\infty)=353$; **492**.
- ?-Bromo-4-toluidine-2-sulphonic acid.**
 $\text{C}_7\text{H}_5\text{O}_3\text{NBrS}$. [Me=1; $\text{NH}_2=4$.]
 $k_A \times 10^5$ at $25^\circ=4.5$; diminishes on diln.
 $\Lambda(64)=145.7$, $(1024)=287.6$, $(\infty)=353$; **492**.
- Bromo-2,6-toluylenediamine-4-sulphonic acid.** (Bromo-diamino-p-sulphotoluic acid). $\text{C}_7\text{H}_5\text{O}_3\text{N}_2\text{BrS}=\text{Me}.\text{C}_6\text{H}(\text{Br})(\text{NH}_2)_2.\text{SO}_3\text{H}$.
[Me=1; $\text{NH}_2=2,6$; Br=3; $\text{SO}_3\text{H}=4$.]

$k_A \times 10^4$ at $25^\circ = 1.72$; diminishes on diln.

$\Lambda(135.5) = 50.4$, $(1084) = 122.1$, $(\infty) = 353$; **1372**.

Bromotrihydroxy- see **Trihydroxy-bromo-**

δ -Bromovaleric acid. $C_5H_9O_2Br = CH_2Br.(CH_2)_3.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.91$; m. p. 39° – 40° ; **1099**, **1908**.

$\Lambda(64) = 13.0$, $(\infty) = 354$; **1099**.

Brucine. $C_{22}H_{30}O_4N_2$.

$k_B \times 10^5$ at 15° is about 0.07 (hydrol.); **1779**. At $18^\circ = 0.1$ (cond.);

1224. At 20° is over 1.7 (colorim.); **1776**. At $25^\circ = 1$ aq.; **1241**.

Second $k_B \times 10^{11} = 2.5$ (colorim.); **1776**.

At 18° , $\mu(751) = 5.13$, $(\infty) = 193$; **1224**. At 25° , $\mu(713) = 11.1$, $(1426) = 22.3$, $(\infty) = 189.4$; **1241**.

In HCN, fair cond.; **943**. In NH_3 , qual.; **606**.

B.HCl at 25° , $\Lambda(32) = 75.5$, $(1024) = 89.2$; **270**; **1224**. In HCN, small cond.; **943**. – B. HNO_3 and 2B. H_2SO_4 ; **1611**.

– B. $C_6H_{11}Cl$, B.EtCl and B. $(C_2H_4Br)Cl$; **270**. – B.Acetate; **145b**.

Buckthorn see **Rhamnus Frangula**.

Bulbine frutescens. [The references to this are incomplete.]

Cond. of sap of stem and leaves; **253**, **1326**.

α -Butanetetra-carboxylic acid. (Tetra-carboxylic acid).

$C_8H_{10}O_8 = CO_2H.CH_2.CH(CO_2H).CH(CO_2H).CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 4.0$; increases on diln.; m. p. 233° ; **1839**; m. p. 236° ; **66**.

$\mu(64) = 51.8$, $(1024) = 173$, $(\infty) = 350$; **1839**. $\mu(32) = 37.4$, $(\infty) = 351$; **868**.

4Na.A, $\mu(32) = 81.0$, $(1024) = 110.0$; **66**.

β -Butanetetra-carboxylic acid. $C_8H_{10}O_8$.

$k_A \times 10^4$ at $25^\circ = 8$; m. p. 189° ; **1839**; $= 4$; m. p. 189° ; **66**. [Walden says that the acid he measured, titred as a dibasic acid, and that Bischoff got an acid, m. p. 185° , purer than that of Auwers.]

$\mu(32) = 37.1$, $(\infty) = 351$; **868**.

Na salt, $\mu(32) = 81.8$, $(1024) = 110.8$; **66**.

Butenyltricarboxylic acid. (Ethylethenyltricarboxylic acid).

$C_7H_{10}O_6 = Et.CH(CO_2H).CH(CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 3.07$; m. p. 136° – 137.5° ; **1839**.

Second $k_A \times 10^5 = 2.2$ (cond.); **1911**.

At 25° , $\mu(32) = 94.7$, $(1024) = 290$, $(\infty) = 353$; **1839**.

iso-Butenyltricarboxylic acid. (Dimethyl-ethenyl-tricarboxylic acid).

$C_7H_{10}O_6 = Me_2C(CO_2H).CH(CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 3.34$; m. p. 148° .

- $\mu(32)=97.5$, $(1024)=297$, $(\infty)=353$; 1839. See also β -Dimethylethenyltricarboxylic acid.
- iso-Butylacetic acid.** $C_6H_{12}O_2=Me_2CH.(CH_2)_2.CO_2H$.
 $k_A \times 10^5$ at $25^\circ=1.5$; b. p. 199.7° (cor.); 180, 601.
 $\Delta(32)=7.8$, $(1024)=41.7$, $(\infty)=352$; 180.
 Na.A at 25° , $\Delta(32)=63.3$, $(1024)=73.6$; 601.
- norm.-Butyl alcohol.** $C_4H_{10}O$.
 In NH_3 , qual.; 606.
- iso-Butyl alcohol.** $C_4H_{10}O=Me_2CH.CH_2.OH$.
 $\kappa \times 10^8$ at 18° is less than 1; 478. At $25^\circ=8.4$; 1649; =34; 1569.
 In NH_3 , qual.; 606.
 Cond. with oxalic acid; 45. As solvent; 334, 483, 1579, 1649.
- tertiary-Butyl alcohol.** (Trimethyl-carbinol). $C_4H_{10}O=Me_3C.OH$.
 In SO_2 ; 1829, 1842. In NH_3 , qual.; 606. In $MeNH_2$, no cond.; 637.
 Cond. with oxalic acid; 45. As solvent; 334.
- iso-Butyl aldehyde.** C_4H_8O .
 In NH_3 , qual.; 606.
- iso-Butylamine.** $C_4H_{11}N=Me_2CH.CH_2.NH_2$.
 $\kappa \times 10^8$ at 25° is less than 2; b. p. $67^\circ-69^\circ$ @ 745 mm.; 1388.
 $k_B \times 10^4$ at $25^\circ=3.1$ aq.; about 16% too high; 271, 420.
 $\mu(32)=19.6$ (256)=48.6, $(\infty)=204$; 271.
 Cond. with acetic acid; and as solvent; 1388.
 B.HCl at 25° , $\Delta(32)=92.4$, $(1024)=103.8$; 270.
- secondary-Butylamine.** (Methylethylcarbinamine).
 $C_4H_{11}N=Et.CH(NH_2).Me$.
 $k_B \times 10^4$ at $25^\circ=4.4$ aq.; about 16% too high.
 $\mu(32)=23.0$, (256)=57.1, $(\infty)=204$; 271.
 B.HCl at 25° , $\Delta(32)=92.0$, $(1024)=103.8$; 270.
- tertiary-Butylamine.** (Trimethyl-carbinamine).
 $C_4H_{11}N=Me_3C.NH_2$.
 $k_B \times 10^4$ at $25^\circ=3.4$ aq.; about 16% too high.
 $\mu(32)=20.3$, (256)=50.4, $(\infty)=204$; 271.
 B.HCl at 25° , $\Delta(32)=92.3$, $(1024)=104.2$; 270.
- iso-Butyl bromide.** C_4H_9Br .
 In NH_3 , qual.; 606.
- Butyl cyanide** see valeronitrile.
- Butylene bromide.** $C_4H_8Br_2$.
 $\kappa \times 10^8$ at 25° is less than 2; b. p. $150^\circ-152^\circ$ @ 741.2 mm.
 Cond. with organic compounds and $AgNO_3$; 1388.
- iso-Butylene bromide.** $C_4H_8Br_2=Me_2.CBr.CH_2Br$.
 With allyl thiocarbimide, no cond.; 1223.
- iso-Butylfumaric acid.** (*iso*-Propylmesaconic acid).
 $C_8H_{12}O_4=iso-Bu.C(CO_2H):CH(CO_2H)$.

- $k_A \times 10^4$ at $25^\circ = 9.3$; m. p. $184^\circ - 185^\circ$.
 $\mu(128) = 102.4$, $(1024) = 220$, $(\infty) = 353$; **1838**.
norm.-Butyl iodide. C_4H_9I .
 In HBr, HI and H_2S , no cond.; **1897**.
iso-Butyl iodide. C_4H_9I .
 In HBr and H_2S , no cond.; **1897**.
tertiary-Butyl iodide. (Trimethyl-methyl iodide). $C_4H_9I = Me_3CI$.
 In SO_2 ; b. p. $99^\circ - 100^\circ$; **1829**, **1842**.
Butylmalonic acid. $C_7H_{12}O_4 = Bu.CH(CO_2H)_2$.
 $k_A \times 10^3$ at $25^\circ = 1.03$; diminishes on diln.; m. p. 102° .
 $\mu(32) = 58.9$, $(1024) = 218$, $(\infty) = 355$; **1838**.
iso-Butylmalonic acid. $C_7H_{12}O_4$.
 $k_A \times 10^4$ at $25^\circ = 9.0$; diminishes on diln.; m. p. 107° .
 $\mu(32) = 55.4$, $(1024) = 214$, $(\infty) = 355$; **1838**.
Butylmethyl- see **Methylbutyl-**
iso-Butyl nitrate see **Nitric acid iso-butyl ester**.
iso-Butylphenol. $C_{10}H_{14}O$.
 $k_A \times 10^7$ at $25^\circ = 2.7$.
 $\Lambda(328) = 3.3$, $(1312) = 6.7$, $(\infty) = 356$; **70**. [There is no way of determining what this phenol is.]
iso-Butyl phosphoric acid see **Phosphoric acid iso-butyl ester**.
Butylquinolinium tri-iodide. $C_{13}H_{16}NI_3 = C_9H_7N.BuI.I_3$.
 Cond. in molten state; m. p. 60.7° ; **1578**.
iso-Butylquinolinium tri-iodide. $C_{13}H_{16}NI_3$.
 Cond. in molten state; m. p. 85.6° ; **1578**.
iso-Butyl-succinic acid. $C_9H_{14}O_4 = CO_2H.CH(iso-Bu).CH_2.CO_2H$.
 $k_A \times 10^6$ at $25^\circ = 8.82$; m. p. $104^\circ - 105^\circ$; **1823**, **1838**.
 $\mu(32) = 18.1$, $(1024) = 90.4$, $(\infty) = 351$; **1838**.
 $2Na.A$ at 25° , $\mu(32) = 74.7$, $(1024) = 92.3$; **1823**.
iso-Butylsulphuric acid see **Sulphuric acid mono iso-butyl ester**.
Butyramide see **Butyric acid amide**.
Butyrhydroxamic acid. $C_4H_9O_2N = C_3H_7\overset{\overset{O}{\parallel}}{C}.N.OH$.
 $k_A \times 10^8$ [probably at 25°] = 2.3.
 $\mu(16) = 0.2$, $(32) = 0.4$, $(\infty) = [380]$; **1353a**.
Butyric acid. $C_4H_8O_2 = Me.CH_2.CH_2.CO_2H$.
 $\kappa \times 10^8$ at $18^\circ = 6$; **1380**; also **517**.
 $k_A \times 10^5$ at $0^\circ = 1.66$ aq.; slight increase on diln.; **1018**, **1968a**.
 At $9.4^\circ = 1.63$; **1968a**. At $10^\circ = 1.67$; **875**. At $14^\circ = 1.56$ aq.; **838**. At $18^\circ = 1.6$; **93**, **94**, **43**; (colorim.); **1563**. At $20^\circ = 1.71$; **875**. At $25^\circ = 1.6$. The values vary greatly, probably because of the difficulty of purifying the acid. The extremes are, 1.45 and 1.75; **180**, **461**, **601**, **1184**, **1368**, **1370**, **1968**, **1968a**; - (absorption of CO_2); **139**. At $30^\circ = 1.70$; **875**. At

- 35°=1.47; 1968a. At 40°=1.65; 875. At 52°=1.64; 43. At 55°=70 (action of diastase on starch); approximate; 2002. T not stated; (colorim.); 951, 1643, 1781; (precipitation of casein); 693.
- At 25°, $\Delta(32)=7.7$, $(1024)=40.6$, $(\infty)=356$; 1370. $\Delta(1024)=42.2$; 180. At 0°–35°; 1968, 1968a. At 10°–50°; 875. Also 43, 93, 542, 646, 767, 788, 1747.
- In HBr and HCl; 30. In NH₃, qual.; 606. In Me, Et and *norm.*-amyl alc.; 787, 788. In amyl alc.; 932.
- Cond. with boric acid; 1184. With inorg. salts; 1994. With organic compounds; 93, 94, 1011, 1620, 1747, 1994. Under pressure of 1–260 atmospheres; 542.
- Ba.2A; 94. – Li.A; 1367. – Mg.2A; 1836. – K.A; 94, 1367. – Ag.A; 1537. – Na.A at 25°, $\Delta(32)=67.4$, $(1024)=77.4$; 1368a, 1367. Also 43, 93, 94, 875, 1416, 1537, 1837, 1968a. With organic compounds; 94, 1994. Under pressure of 1–260 atmospheres; 542. – Cinchonine.A; 1620.
- Butyric acid amide.** (Butyramide). $C_4H_9ON=Me.(CH_2)_2.CO.NH_2$. Cond. with HCl and NaOH; 410, 412. With HgCl₂; 1097.
- Butyric acid cyanoamide.** (Butyrylcynoamide). $C_5H_9ON_2=Me.(CH_2)_2.CO.NH(CN)$. $k_A \times 10^4$ at 25°=1.12; increases on diln. $\Delta(35.9)=20.7$, $(1148.8)=105.6$, $(\infty)=352$; 70.
- Butyric acid amyl ester.** $C_9H_{18}O_2=Me.(CH_2)_2.CO_2C_5H_{11}$. In NH₃, qual.; 606. Effect of temperature on cond.; 106.
- Butyric acid iso-butyl ester.** $C_8H_{16}O_2$. In NH₃, qual.; 606. Effect of temperature on cond.; 106.
- Butyric acid ethyl ester.** $C_6H_{12}O_2=Me.(CH_2)_2.CO_2Et$. In NH₃, qual.; 606. Effect of temperature on cond.; 106.
- Butyric acid glyceryl ester.** (Tributylin). $C_{15}H_{26}O_6=(PrCO_2)_3.C_3H_5$. In NH₃, qual.; 606.
- Butyric acid methyl ester.** $C_5H_{10}O_2$. In NH₃, qual.; 606. Effect of temperature on cond.; 106.
- Butyric acid propyl ester.** $C_7H_{14}O_2$. Effect of temperature on cond.; 106.
- iso-Butyric acid.** $C_4H_8O_2=Me_2CH.CO_2H$. α is very small; 517. $k_A \times 10^5$ at 0°=1.55; 1968a. At 10°=1.59; 875. At 16.5°=1.53; 1968a. At 18°=1.6 (colorim.); 1563. At 20°=1.62; 875.

- At 25°=1.6. The variation of values is probably due to the difficulty of purifying the acid. The extremes are 1.41 and 1.62. See 180, 420, 461, 601, 1370, 1968a. At 30°=1.61; 875. At 35°=1.42; 1968a. At 40°=1.56; 875. At 55°=80 (action of diastase on starch); approximate; 2002. T not stated; (colorim.); 1643.
- At 25°, $\Lambda(32)=7.9$, $(1024)=43.6$, $(\infty)=356$; 180. $\Lambda(32)=7.5$, $(1024)=39.7$; 601. At 0°–35°; 1968a. At 14°–50°; 875; also 542, 619, 1554.
- In NH₃, qual.; 606.
- Cond. with inorg. salts; 1554. With organic salts; 1994. Under pressure of 1–260 atmospheres; 542.
- Li.A; 1367. – Mg.2A; 1836. – K.A; 1367. – Ag.A; 656, 1537. – Na.A at 25°, $\Lambda(32)=67.2$, $(1024)=77.7$; 1368a, 1367. At 10°–50°; 875. Under pressure of 1–260 atmospheres; 542.
- iso*-Butyric acid amide. (*iso*-Butyramide).
 $C_4H_9ON=Me_2CH.CONH_2$.
 Cond. with HCl; 410. With NaOH; 412.
- iso*-Butyric acid anhydride. $C_8H_{14}O_4$.
 $\kappa \times 10^7$ at 0°=0.994. At 25°=1.60; 1843, 1844.
 Cond. as solvent of NEt₄I; 1844.
- iso*-Butyric acid *iso*-butyl ester. $C_8H_{16}O_2$.
 Effect of temperature on cond.; 106.
- iso*-Butyric acid ethyl ester. $C_6H_{12}O_2$.
 Effect of temperature on cond.; 106.
- Butyro nitrile. (Propyl cyanide). $C_4H_7N=C_3H_7.CN$.
 $\kappa \times 10^5$ at 25°=1; b. p. 115.4°–115.6° @ 739 mm.; 482.
- Butyrylcyno- see Cyanobutyryl-
- Butyrylcynoamide see Butyric acid amide.

C.

- Cacalia anteuphorbium*. [The references to this are incomplete.]
 Cond. of sap; 253, 1326.
- Cacodylic acid*. (Dimethyl-arsinic acid). $C_2H_7O_2As=Me_2.AsO.OH$.
 $k_A \times 10^7$ at 0°=4.1; 2009. At 25°=7.5 (sapon.); 855a;=6.4 (cond.); 888; 2009; (sapon.); 738, 1141, 1150. (Colorim.); 1773.
 $k_B \times 10^{13}$ at 0°=0.42 (hydrol.); 2009, 2010. At 25°=3.8; 888;=5.6 (sapon.); 855a, also 2009, 2011, and 738.
 Cond.; 1269, 1747, 1836. At 25°, $\mu(32)=1.3$, $(256)=4.4$, $(\infty)=354.5$; 888.
 Cond. with HCl and HNO₃; 2009. With MoO₃; 1269. With lactose; 1747.

Ba.2A; **2009**. - Mg.2A; **1836**. - Na.A at 0°; **2009**. At 25°, $\mu(32)=63.7$, (1024)=74.1; **2009**; **738**. - B.HCl and B.HNO₃; **2009**.

Cadmium.

In complex salts; **1384**, **1431**, **1482**, **1946**.

See also the following compound.

Cadmium cyanic acid. $C_4H_2N_4Cd=H_2Cd(CN)_4$.

2K.A at 25°, $\Lambda(32)=110.0$, (1024)=125.1; **1832**; **1485**.

Caffeic acid. (3,4-Dihydroxy-cinnamic acid). $C_8H_8O_4$.

Cond. increased by boric acid; **1186**.

Caffeine. (1,3,7-Trimethyl-2,6-dioxy-purine. 1,3,7-Trimethyl-xanthine). $C_8H_{10}O_2N_4$.

$k_A \times 10^{14}$ at 25° is less than 1 (solub.); m. p. 234°; **1997**.

$k_B \times 10^{10}$ at 15° is less than 1 (colorim.); **1775**. At 25°=200 aq. [of doubtful value]; **1241**. At 40.1°=0.0004 (sapon.); **1995**, **1997** and **1150**.

At 25°, $\mu(22)=0.15$, (42)=0.2, (∞)=195; [accuracy doubtful]; **1241**.

In HCN, no cond.; **943**. In SO₂; **1842**. In NH₃, qual.; **606**. [In **1842** this is given as theine, with formula $C_8H_{10}O_4N_2$, due probably to a typographical error.]

Camphocarboxylic see **Camphorcarboxylic**.

α -Campholenic acid. $C_{10}H_{16}O_2=C_9H_{15}.CO_2H$.

$k_A \times 10^6$ at 18°=1.7; b. p. 258°-261°.

$\Lambda(361)=22.3$, (1911)=53.1, (∞)=317; **1899**.

Campholic acid. $C_{10}H_{18}O_2=C_9H_{17}.CO_2H$.

$k_A \times 10^6$ at 25°=4.6; diminishes on diln.

$\Lambda(1024)=23.5$, (2048)=30.8, (∞)=353; **1372**.

cis-trans-Campholytic acid. $C_9H_{14}O_2=C_8H_{13}.CO_2H$.

$k_A \times 10^6$ at 25°=9.3; b. p. 240°-242°.

$\Lambda(94.5)=10.3$, (756.0)=28.8, (∞)=352; **1861**.

iso-Campholytic acid. (*iso*-Lauronic acid). $C_9H_{14}O_2=C_8H_{13}.CO_2H$.

$k_A \times 10^6$ [at 25°]=8.6; m. p. 133° (cor.); **1862**, **1861**. [This is the camphothetic acid of **1861**.]

$\Lambda(850)=28.7$, (∞)=351; **1862**.

Camphononic acid. $C_9H_{14}O_3=C_7H_{12}CO.CO_2H$.

$k_A \times 10^6$ at 18°=3.9 (colorim.); **1563**.

Camphopyric acid. (Apocamphoric acid. Pyrocamphenic acid).

$C_8H_{14}O_4=C_7H_{13}(CO_2H)_2$.

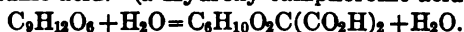
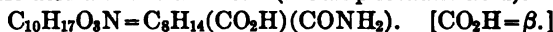
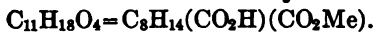
$k_A \times 10^6$ at 18°=3.5 (colorim.); **1563**.

d-Camphor. $C_{10}H_{16}O$.

In HCN, no cond.; **943**.

Cond. with acetic acid; **1386**.

Camphoramic acid see **Camphoric acid amide**.

Camphoronic acid. (α -Hydroxy-camphoronic acid).
 $k_A \times 10^3$ at $25^\circ = 3.2$; **1372**.
Second $k_A \times 10^6 = 6.5$ (inversion); **1638**; = 13; **1911**.
At 25° , $\mu(64) = 127.6$, $(1024) = 286.2$. (∞) = 352; **1372**.
Camphorcarboxylic acid. $\text{C}_{11}\text{H}_{16}\text{O}_3 = \text{C}_{10}\text{H}_{15}\text{O}.\text{CO}_2\text{H}$.
 $k_A \times 10^4$ at $18^\circ = 2$ (colorim.); **1563**. At $25^\circ = 1.74$; **1372**.
At 25° , $\Lambda(64) = 35.0$, $(1024) = 119.6$, (∞) = 351; **1372**.
In benzene, no cond.; **289**. In Me alc.; **290**.
Na.2A; in benzene, no cond. - Na.A in Me alc.; **289**.
Camphorcarboxylic acid amyl ester. $\text{C}_{16}\text{H}_{26}\text{O}_3$.Na.A in ether, no cond.; **289**.
Camphorcarboxylic acid methyl ester. $\text{C}_{12}\text{H}_{18}\text{O}_3$.Na.A in benzene, no cond. Cond. in Me alc.; **289**.
d-Camphoric acid. $\text{C}_{10}\text{H}_{16}\text{O}_4 = \text{C}_8\text{H}_{14}(\text{CO}_2\text{H})_2$.
 $k_A \times 10^5$ at $18^\circ = 2.5$ aq.; **164**; (colorim.); **1562**, **1563**. At $25^\circ = 2.25$; **1372**; m. p. 186° and 187° ; **1666**, **1824**.
Second $k_A \times 10^7 = 7$ (inversion); **1638**; = 140 (part.); **370**.
At 25° , $\mu(64) = 13.0$. $(1024) = 49.3$, (∞) = 352; **1372**. Also **171**.
In HCN, little cond.; **943**.
Cond. with KOH; **171**. Cond. not increased by boric acid; **1184**.
2K.A at 18.2° , $\mu(150) = 75.3$, $(1500) = 82.2$. - KH.A; **164**.
Camphoric acid α -mono amide. (α -Camphoramidic acid).
 $k_A \times 10^5$ at $25^\circ = 1.4$; diminishes on diln.; = 0.84 after 16 hours; **1243**.
At 25° , $\mu(64) = 10.3$, $(256) = 17.5$, (∞) = 350; **1244**.
Camphoric acid β -mono amide. (β -Camphoramidic acid).
 $k_A \times 10^5$ at $25^\circ = 1.28$; increases on diln.; **1243**.
At 25° , $\mu(64) = 9.7$, $(512) = 27.7$, (∞) = 350; **1244**.
d-Camphoric acid mono *allo*-methyl ester.
 $k_A \times 10^5$ at $25^\circ = 1.08$; m. p. 85.5° .
 $\mu(209.5) = 16.2$, $(838.0) = 31.5$, (∞) = 350; **1860**.
d-Camphoric acid mono *o*-methyl ester.
 $k_A \times 10^5$ at $25^\circ = 7.95$; m. p. 76° .
 $\mu(118) = 10.5$, $(944) = 29.1$, (∞) = 350; **1860**.
l-Camphoric acid. $\text{C}_{10}\text{H}_{16}\text{O}_4$.
 $k_A \times 10^5$ at $25^\circ = 2.28$; m. p. 187° ; **1824**.
Second $k_A \times 10^7 = 7$ (inversion); **1638**.
Cond. with organic acids; **1638**.

inact.-Camphoric acid. $C_{10}H_{16}O_4$.

$k_A \times 10^5$ at $25^\circ = 2.29$; m. p. 202° - 203° ; **1824**.

Second $k_A \times 10^7 = 7$ (inversion); **1638**.

d-iso-Camphoric acid. $C_{10}H_{16}O_4$.

$k_A \times 10^5$ at $25^\circ = 1.74$; m. p. 171° - 172° ; **1824**.

l-iso-Camphoric acid. $C_{10}H_{16}O_4$.

$k_A \times 10^5$ at $25^\circ = 1.60$; m. p. 172.5° ; **1889**. $= 1.74$; m. p. 171° - 172° ; **1824**.

Second $k_A \times 10^7 = 5.9$ (inversion); **1638**.

At 25° , $\mu(70.5) = 11.7$, $(564) = 31.8$, $(\infty) = 352$; **1889**.

Cond. with organic acids; **1638**.

l-iso-Camphoric acid mono *o*-ethyl ester.

$C_{12}H_{20}O_4 = C_8H_{14}(CO_2H)(CO_2Et)$.

$k_A \times 10^5$ at $25^\circ = 6.5$; m. p. 73.5° .

$\mu(244) = 13.8$, $(488) = 19.1$, $(\infty) = 350$; **1889**.

inact.-iso-Camphoric acid. $C_{10}H_{16}O_4$.

$k_A \times 10^5$ at $25^\circ = 1.74$; m. p. 190° - 191° ; **1824**.

meso-Camphoric acid. $C_{10}H_{16}O_4$. [This was a mixture of acids.]

Second $k_A \times 10^7 = 6.6$ (inversion); **1638**.

Camphoric acid imide. (Camphorimide). $C_{10}H_{16}O_2N$.

Cond. with $HgCl_2$; **1097**.

l-Camphoronic acid. ($\alpha\alpha\beta$ -Trimethyl-tricarballic acid).

$C_9H_{14}O_6 = CO_2H.CH_2.CMe(CO_2H).CMe_2.CO_2H$.

$k_A \times 10^4$ at $18^\circ = 1.8$ (colorim.); **1562**, **1563**. At $25^\circ = 1.75$; **1372**.

Second $k_A \times 10^6 = 8.3$ (?) (inversion); **1638**.

At 25° , $\mu(32) = 25.3$, $(1024) = 121.3$, $(\infty) = 352$; **1372**.

Camphor oxime. $C_{10}H_{17}ON$.

In NH_3 ; **604**.

Camphor quinone. $C_{10}H_{14}O_2$.

KCN derivative ($=C_{10}H_{14}O.OK.CN$) is a moderately good electrolyte; **1050**.

Camphothetic acid see *iso*-Campholytic acid.

Cane sugar see Saccharose.

Capric acid. $C_{10}H_{20}O_2 = Me.(CH_2)_8.CO_2H$.

In NH_3 , qual.; **606**.

Caproic acid. (Capronic acid. Hexoic acid).

$C_6H_{12}O_2 = Me.(CH_2)_4.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.46$; **180**, **461**, **1370**; $= 1.38$; b. p. 205.7° ; **601**; (colorim.); **1781**.

$\Lambda(32) = 7.5$, $(1024) = 40.3$, $(\infty) = 352$; **1370**.

In NH_3 , qual.; **606**.

Na.A at 25° , $\Lambda(32) = 64.0$, $(1024) = 73.8$; **601**, **1368a**.

Caproic acid amide. (Capronamide). $C_6H_{13}ON = Me.(CH_2)_4.CONH_2$.

Cond. with HCl ; **410**. With $NaOH$; **412**.

iso-Caproic acid. (*iso*-Capronic acid).



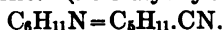
$k_A \times 10^5$ at $25^\circ = 1.57$. $\Lambda(27.8) = 7.5$, $(442.5) = 29.6$, $(\infty) = 368$;

461. Cond. with organic acids; 145b.

Capronamide see Caproic acid amide.

Capronic acid see Caproic acid.

Capronitrile. (*iso*-Amyl cyanide. Caproyl nitrile).



$\kappa \times 10^6$ at $25^\circ = 3.3$.

Cond. with Cu oleate; and as solvent; 1569.

Caprylic acid. $\text{C}_8\text{H}_{16}\text{O}_2 = \text{Me}.\text{(CH}_2)_6.\text{CO}_2\text{H}.$

$k_A \times 10^5$ at $25^\circ = 1.44$; b. p. 237.5° (cor.).

$\Lambda(256) = 20.6$, $(1024) = 40.2$, $(\infty) = 351$; 601.

In HCl, little cond.; 30. In NH_3 , qual.; 606.

Caprylic acid ethyl ester. $\text{C}_{10}\text{H}_{20}\text{O}_2.$

In NH_3 , qual.; 606.

Carballylic acid see Tricarballic acid.

Carbamic acid. (Aminofornic acid). $\text{CH}_3\text{O}_2\text{N} = \text{NH}_2.\text{CO}_2\text{H}.$

NH_4A ; 302a.

Carbamic acid amide see Urea.

Carbamic acid benzyl ester. (Benzyl urethane).



In pyridine; 754.

Carbamic acid ethyl ester. (Urethane). $\text{C}_5\text{H}_7\text{O}_2\text{N} = \text{NH}_2.\text{CO}_2\text{Et}.$

$\kappa \times 10^8$ at $18^\circ = 5$; 1470.

In HCN, no cond.; 943. In NH_3 ; 610.

Cond. with HgCl_2 ; 1097. As solvent of inorg. compounds; 748, 1470.

Carbamide see Urea.

Carbamide imide azide see Diazo guanidine.

o-Carbaminebenzene sulphonic acid see *o*-Sulphobenzoic acid amide.

Carbaminethioglycollic acid. $\text{C}_8\text{H}_8\text{O}_2\text{NS} = \text{NH}_2\text{CO}.\text{SCH}_2.\text{CO}_2\text{H}.$

$k_A \times 10^4$ at $25^\circ = 2.66$; $= 2.61$ (catal.); m. p. 139° – 139.5° with dec.; 854, 1370.

$\Lambda(32) = 30.5$, $(1024) = 136.8$, $(\infty) = 360$; 1370.

Carbaminethioglycollic acid anhydride see Diketo-tetrahydro-thiazole.

Carbazole. $\text{C}_{12}\text{H}_9\text{N}.$

In NH_3 , qual.; 606.

Carbon disulphide. CS_2 . [The references to this are incomplete.]

$\kappa \times 10^8$ at $18^\circ = 2$; 263, 305, 384, 386, 1010, 1098, 1344, 1556.

Cond. with organic compounds; 263, 386. Complex with AlBr_3 , EtBr ; 1437. Of thin layer; 301. Effect of radium and X-rays on cond.; 417, 872, 1491, 1805. As solvent; (711), (1445).

Carbonic acid. CH_3O_2 . [The references to this are incomplete.]

$k_A \times 10^7$ at $18^\circ = 3$; **733, 1865, 1883.**

Carbonic acid diethyl ester. $\text{C}_6\text{H}_{10}\text{O}_3 = \text{OC}(\text{OEt})_2$.

In NH_3 , qual.; **606.**

With allyl thiocarbimide, no cond.; **1223.** Effect of temperature on cond.; **106.**

Other esters of carbonic acid.

Aminophenyl ethyl carbonate see under that head.

Aminophenyl methyl carbonate see under that head.

Methyl-aminophenyl ethyl carbonate see under that head.

Carbon tetrachloride see **Tetrachloro-methane.**

Carbonyldi-thioglycollic acid see **Dithio-carbondiglycollic acid.**

Carbopyrrolic acid see **Pyrrolicarboxylic acid.**

Carbostyryl. (2-Hydroxy-quinoline). $\text{C}_9\text{H}_7\text{ON}$.

$k_B \times 10^9$ at $18^\circ = 1.94$ (colorim.); **1777.** Cond. very small, due to impurity; **733.**

o-Carboxyanilinoacetic acid methyl ester see **Phenylglycine-o-carboxylic acid exo mono methyl ester.**

Carboxydehydroacetic acid. (Dehydroacetylcarboxylic acid).

$\text{C}_9\text{H}_8\text{O}_6$.

$k_A \times 10^3$ is about 3. $\mu(158) = 300.2$, $(632) = 318$, $(\infty) = 350$; m. p. 154° ; **1399.**

o-Carboxymethyl-anilinoacetic acid see **Phenylglycine-o-carboxylic acid eso mono methyl ester.**

Carbyloxime see **Fulminic acid.**

Carminic acid. $\text{C}_{22}\text{H}_{22}\text{O}_{13}$. Also given as $\text{C}_{11}\text{H}_8\text{O}_4$, $\text{C}_{11}\text{H}_{11}\text{O}_6$, $\text{C}_{11}\text{H}_{12}\text{O}_7$ and $\text{C}_{17}\text{H}_{18}\text{O}_{10}$.

Na.A at 25° , $\Lambda(32) = 58.0$, $(1024) = 69.6$ for molecular weight 480.

" = 63.1, " = 80.0 " " " 492.

" = 56.5, " = 87.6 " " " 534;

1275.

Carvacrol. (4-iso-Propyl-2-hydroxy-toluene).

$\text{C}_{10}\text{H}_{14}\text{O} = \text{Me}_2\text{CH.C}_6\text{H}_3(\text{OH}).\text{Me.}$

In HBr ; **29.**

Cond. with NaOH alone, and with HCl ; **1508.**

Carvene see **Limonene.**

Carvole see **Carvone.**

Carvone. (Carvole). $\text{C}_{10}\text{H}_{14}\text{O}$.

In NH_3 , qual.; **606.**

Cascarilla. [The references to this are incomplete.]

Cond. of dil. soln. of bark; **146.**

Casein. [The references to this are incomplete.]

The composition of casein seems to depend on its source. There are several different caseins, and the difficulty of purifying,

makes it impossible to get one moderately pure compound. In the following references the casein is probably from cow's milk. For a partial review of the literature see 1501.

Cond. alone; 145b, 1599. With acids; 1120, 1635. With bases; 145b, 1504, 1506a, 1636. With inorg. salts; 145b, 1599. With HgCl_2 , formaldehyde and phenol; 1599. With pepsin and with trypsin; 145b. Concentration of H and OH ions; 422, 1506, 1511b.

NH_4 salt; 145a, 145b, 1054, 1504, 1505, 1555. - Mg salt; 1355a. - Na salt at 25° ; composition uncertain, is 4Na or $6\text{Na}\cdot\text{A}$; $\Lambda(40)=46.5$, $(640)=69.5$; 1053. - 145a, 1054, 1504, 1505, 1555, 1599, 1636. With NaOH soln. and erepsin; 523. - Acid Na salt; 1053.

Casein from cow's milk. NH_4 salt. - Li neutral and acid salts. - K neutral salt. - Na neutral salt at 20° , $\Lambda(1024-32)=26.2$; also acid and basic Na salts; 1118. Effect of digestion with pepsin and HCl ; 1119. Ba, Ca and Sr salts; 1506b.

Casein from goat's milk. Neutral K salt and Na salt; 1118. Effect of digestion with pepsin and HCl ; 1119.

iso-Casein. [The references to this are incomplete.]

Na salt at 25° , $\Lambda(137)=67.5$, $(1096)=89.2$; 1054. Qual.; 1555.

para-Casein. [The references to this are incomplete.]

Cond. at 25° is about 2% higher than that of casein; 1053.

Caseinogen. All references to this are given under Casein.

Castor oil. [The references to this are incomplete.]

Resistance; 1010.

Castor oil plant see *Ricinus communis*.

Cerebrospinal fluid. [The references to this are incomplete.]

κ ; 621.

Cerebrum see Brain.

Cetyl alcohol. $\text{C}_{16}\text{H}_{34}\text{O}=\text{C}_{16}\text{H}_{33}\cdot\text{OH}$.

Cond. at 0° - 104° ; 101, 110.

In NH_3 , insol.; 606. In MeNH_2 , no cond.; 637.

Cetylmalonic acid. $\text{C}_{19}\text{H}_{36}\text{O}_4=\text{CO}_2\text{H}\cdot\text{CH}(\text{C}_{16}\text{H}_{33})\cdot\text{CO}_2\text{H}$.

$k_A \times 10^7$ at $25^\circ=3$; increases on diln.

$\mu(256)=2.6$, $(1024)=6.1$, $(\infty)=350$; 1638.

Chelidonic acid. (Acetone-dioxalic acid anhydride).

$\text{C}_7\text{H}_4\text{O}_6=\text{CO}(\text{CH}:\text{C}\cdot\text{CO}_2\text{H})_2\cdot\text{O}$.

At 25° , $\mu(62.9)=427$, $(503)=611$; 1372.

Chlor- see Chloro-

Chloral. (Trichloro-acetaldehyde). $\text{C}_2\text{HOCl}_3=\text{CCl}_3\cdot\text{CHO}$.

In HCN , no cond.; 943.

Chloral alcoholate, hydrolysis; 292.

Chloralcyanohydrate see **Trichloro-lacto nitrile**.

Chloral hydrate. $\text{C}_2\text{HOCl}_3(=\text{CCl}_3.\text{CHO}) + \text{H}_2\text{O} = \text{C}_2\text{H}_3\text{O}_2\text{Cl}_3$.

$k_A \times 10^{11}$ at $0^\circ = 0.4$ (hydrol.). At $18^\circ = 1$ (hydrol.); **512**.

At 0.65° , $\kappa \times 10^6$ of 0.01 normal soln. = 6; **502**.

In NH_3 , qual.; **606**.

Cond. with inorg. acids; **741**. With inorg. bases; **502**, **512**.

Hydrolysis measured by b. p. elevation and f. p. depression; **292**.

Chloroacetanilino-acetic acid see **Chloroacetyl-phenyl amino-acetic acid**.

Chloroacetic acid. $\text{C}_2\text{H}_3\text{O}_2\text{Cl} = \text{CH}_2\text{Cl}.\text{CO}_2\text{H}$.

$k_A \times 10^3$ at $0^\circ = 1.81$ aq.; diminishes on diln.; **1018**. At $14.1^\circ = 1.58$ aq.; **838**. At $25^\circ = 1.55$; **1370**; (neutral.); **295**, **1718**; (colorim.); **1643**. Relative strength (polarimetric); **1866**; (precipitation of casein); **693**.

Cond.; **294**, **347**, **441**, **782**, **877**, **1094**. At 25° , $\Delta(32) = 72.4$, $(1024) = 249.2$, $(\infty) = 362$; **1370**.

In HCl , poor cond.; in HBr , HI and H_2S , no cond.; **1897**. In SO_2 ; **1842**. In H_2SO_4 ; **223**, **1834**. In N_2O_4 , no cond.; **602**.

In NH_3 , qual.; **606**. In acetone; **475**. In Et alc.; **647**, **782**, **932**. In pyridine; **754**. In tetranitro-methane; **1844**.

Cond. with HCl ; **425**. Cond. not increased by boric acid; **1184**.

With KOH ; **294**. With KCl ; **1994**. With acetic acid and NaOH ; **1717**, **1718**. Under pressure of 1-500 atmospheres; **220**.

NH_4A ; **823**. - Hg_2A ; **1094**. - Na_2A at 25° , $\Delta(32) = 73.4$, $(1024) = 85.2$; **1368a**, **270**. In Et alc.; **932**. - UO_2A ; **449**.

Chloroacetic acid amide. (Chloroacetamide).

$\text{C}_2\text{H}_4\text{ONCl} = \text{CH}_2\text{Cl}.\text{CONH}_2$.

In NH_3 ; **610**.

Cond. with HgCl_2 ; **1097**.

Chloroacetic acid ethyl ester. $\text{C}_4\text{H}_7\text{O}_2\text{Cl} = \text{CH}_2\text{Cl}.\text{CO}_2\text{Et}$.

$\kappa \times 10^6$ at 25° is less than 1.7; b. p. 143.5° ; **1106**, **1107**.

Effect of temperature on cond.; **106**.

As solvent; **1106**, **1107**.

Chloroacetyl bromide. $\text{C}_2\text{H}_2\text{OClBr} = \text{CH}_2\text{Cl}.\text{COBr}$.

In SO_2 ; **1842**.

Chloroacetyl-phenyl amino-acetic acid. (Chloroacetanilino-acetic acid. Chloroacetyl-phenyl glycine).

$\text{C}_{10}\text{H}_{10}\text{O}_3\text{NCl} = (\text{Ph})(\text{CH}_2\text{ClCO})\text{N}.\text{CH}_2.\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ = 3.4$; m. p. 130° .

$\Delta(200) = 81.6$, $(1600) = 182$, $(\infty) = 355$; **1840**.

Chloroamino- see **Aminochloro-**

Chloroanil. (Tetrachloro-*p*-benzoquinone). $\text{C}_6\text{O}_2\text{Cl}_4$.

In NH_3 , qual.; 606.

Chloroanilic acid. (2,5-Dihydroxy-3,6-dichloro-*p*-benzoquinone).

$\text{C}_6\text{H}_2\text{O}_4\text{Cl}_2 = (\text{OH})_2\text{C}_6\text{Cl}_2\text{O}_2$.

$\mu(192) = 369.1$, $(1536) = 514.3$, $(\infty) = 754$; 577. Quoted in 389.

At 25° , $\Lambda(128) = 192.4$, $(1024) = 263.7$; 1275. -729.

2K.A; 577, 1275. - 2Na.A at 25° , $\Lambda(32) = 78.6$, $(1024) = 88.7$; 1275; $\mu(192) = 175.1$; 577. - Na.A; 1275.

***o*-Chloroaniline.** $\text{C}_6\text{H}_5\text{NCl} = \text{Cl.C}_6\text{H}_4.\text{NH}_2$.

$k_B \times 10^{13}$ at $19^\circ = 9.16$ (colorim.); 1777.

B.HCl at 25° , $\mu(50) = 160.0$. - 2B. H_2SO_4 ; 1864.

***m*-Chloroaniline.** $\text{C}_6\text{H}_5\text{NCl}$.

$k_B \times 10^{11}$ at $10^\circ = 0.66$ (colorim.). At $13^\circ = 0.77$ (colorim.); 1777.

At $25^\circ = 4.8$ (hydrol.); 660, 1293. - 3.45 (part.); 584.

B.HCl at 25° , $\mu(50) = 132.5$; 1864. M(32) = 116.6, (512) = 190.7; $\mu(32) = 92.6$; 1293. - 2B. H_2SO_4 ; 1864.

***p*-Chloroaniline.** $\text{C}_6\text{H}_5\text{NCl}$.

$k_B \times 10^{11}$ at $10^\circ = 1.24$ (colorim.); 1777. At $25^\circ = 9.9$ (part.); 584, 548.

B.HCl at 25° , $\mu(50) = 120.0$. - 2B. H_2SO_4 ; 1864.

Chlorobenzene. $\text{C}_6\text{H}_5\text{Cl}$.

In NH_3 , qual.; 606.

***p*-Chlorobenzene diazonium *syn*-cyanide.** (*p*-Chlorodiazobenzene cyanide). $\text{C}_7\text{H}_4\text{N}_3\text{Cl} = \text{Cl.C}_6\text{H}_4.\text{N}_2.\text{CN}$.

At 0° , $\mu(327) = 15.3$; 735.

***o*-Chlorobenzoic acid.** $\text{C}_7\text{H}_5\text{O}_2\text{Cl} = \text{Cl.C}_6\text{H}_4.\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $18^\circ = 1.35$ (colorim.); 1563. At $25^\circ = 1.32$; 1371, 1581.

At $40^\circ = 1.0$ aq. At $50^\circ = 0.9$ aq. At $60^\circ = 0.8$ aq. At $70^\circ = 0.7$ aq. At $80^\circ = 0.6$ aq. At $90^\circ = 0.5$ aq. At $99^\circ = 0.4$ aq.; 1581.

At 25° , $\Lambda(64) = 89.2$, $(1024) = 238.7$, $(\infty) = 356$; 1371.

Na.A at 25° , $\Lambda(32) = 67.3$, $(1024) = 77.8$; 1368a. At $25^\circ - 99^\circ$; 1581.

***m*-Chlorobenzoic acid.** $\text{C}_7\text{H}_5\text{O}_2\text{Cl}$.

$k_A \times 10^4$ at $18^\circ = 1.4$ (colorim.); 1563. At $25^\circ = 1.55$; 1371.

At 25° , $\Lambda(256) = 64.3$, $(1024) = 116.2$, $(\infty) = 356$; 1371.

***p*-Chlorobenzoic acid.** $\text{C}_7\text{H}_5\text{O}_2\text{Cl}$.

$k_A \times 10^5$ at $18^\circ = 9.9$ (colorim.); 1563. At $25^\circ = 9.3$; 1371.

At 25° , $\Lambda(2048) = 125$, $(\infty) = 356$; 1371.

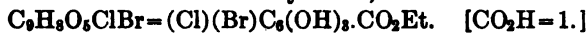
Chlorobromofluoroacetic acid. $\text{C}_2\text{HO}_2\text{ClBrF} = \text{CClBrF.CO}_2\text{H}$.

$k_A \times 10$ at 25° is about 2.

$\Lambda(32) = 313.9$, $(1024) = 350.8$, $(\infty) = 351.6$.

Na.A at 25° , $\Lambda(32) = 67.4$, $(1024) = 75.8$; 1701.

2-Chloro-6-bromogallic acid ethyl ester. (3,4,5-Trihydroxy-2-chloro-6-bromo-benzoic acid ethyl ester).



$k_A \times 10^5$ at $25^\circ = 2.2$; diminishes on diln.; m. p. 134° – 135° .

$\mu(32) = 3.0$, $(256) = 6.0$, $(\infty) = 349$; **404**.

2-Chloro-6-bromogallic acid methyl ester. (3,4,5-Trihydroxy-2-chloro-6-bromo-benzoic acid methyl ester). $\text{C}_8\text{H}_5\text{O}_5\text{ClBr}$.

$k_A \times 10^5$ at $25^\circ = 5.2$; diminishes on diln.; m. p. 162° – 163° .

$\mu(32) = 4.5$, $(256) = 7.2$, $(\infty) = 350$; **404**.

p-Chlorobromosuccinic acid. $\text{C}_4\text{H}_4\text{O}_4\text{ClBr} = \text{CO}_2\text{H}.\text{CHCl}.\text{CHBr}.\text{CO}_2\text{H}$.
In SO_2 , insol.; **1842**.

α -Chlorobutyric acid. $\text{C}_4\text{H}_7\text{O}_2\text{Cl} = \text{Me}.\text{CH}_2.\text{CHCl}.\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $25^\circ = 1.5$; diminishes on diln.; b. p. 101.3° @ 15 mm.

$\Lambda(32) = 69.8$, $(1024) = 232.5$, $(\infty) = 356$; **1099**.

β -Chlorobutyric acid. $\text{C}_4\text{H}_7\text{O}_2\text{Cl} = \text{Me}.\text{CHCl}.\text{CH}_2.\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $25^\circ = 9$; b. p. 108.5° – 109.5° @ 17 mm.

$\Lambda(32) = 18.6$, $(1024) = 91.7$, $(\infty) = 356$; **1099**.

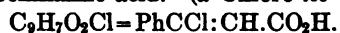
γ -Chlorobutyric acid. $\text{C}_4\text{H}_7\text{O}_2\text{Cl} = \text{CH}_2\text{Cl}.\text{CH}_2.\text{CH}_2.\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $25^\circ = 3$.

$\Lambda(32) = 11.5$, $(64) = 16.2$, $(\infty) = 356$; hydrolyzes to HCl ; **1099**.

Chlorocarbonic acid see **Chloro-formic acid**.

1¹-Chlorocinnamic acid. (α -Chloro-*iso*-cinnamic acid).



$k_A \times 10^5 = 1.14$; diminishes on diln.; k (203) = 1.14, (812) = 1.00;
m. p. 110.5° ; **1299**; quoted in **1683**.

1²-Chlorocinnamic acid. (Phenyl- α -chloroacrylic acid).



$k_A \times 10^5 = 1.05$; diminishes on diln.; k (273) = 1.05, (1892) = 0.087;
m. p. 139° ; **1299**; quoted in **1683**.

β -Chlorocinnamic acid. (β -Chloro-*iso*-cinnamic acid). $\text{C}_9\text{H}_7\text{O}_2\text{Cl}$.

$k_A \times 10^4 = 2.75$; diminishes on diln.; k (342) = 2.75, (1368) = 2.67;
m. p. 132.5° ; **1299**; quoted in **1683**.

***allo*- β -Chlorocinnamic acid.** (β -Chlorocinnamic acid). $\text{C}_9\text{H}_7\text{O}_2\text{Cl}$.

$k_A \times 10^4 = 2.82$; diminishes on diln.; k (707) = 2.82, (1414) = 2.75;
m. p. 143° ; **1299**; quoted in **1683**.

α -Chlorocrotonic acid. $\text{C}_4\text{H}_5\text{O}_2\text{Cl} = \text{MeCH}:\text{CCl}.\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ = 7.2$; increases on diln.

$\Lambda(32) = 49.7$, $(1024) = 203.7$, $(\infty) = 357$; **1371**.

β -Chlorocrotonic acid. $\text{C}_4\text{H}_5\text{O}_2\text{Cl} = \text{MeCCl}:\text{CH}.\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ = 1.44$.

$\Lambda(32) = 23.4$, $(1024) = 113.4$, $(\infty) = 357$; **1371**.

Na.A at 25° , $\Lambda(32) = 68.2$, $(1024) = 78.8$; **1368a**.

α -Chloro-*iso*-crotonic acid. $\text{C}_4\text{H}_5\text{O}_2\text{Cl} = \text{MeCH}:\text{CCl}.\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $25^\circ = 1.58$; **1371**, **1368**.

$\Lambda(32)=71.6$, $(1024)=250.7$, $(\infty)=357$; **1371**.

Na.A at 25° , $\Lambda(32)=68.4$, $(1024)=79.2$; **1368a**.

β -Chloro-iso-crotonic acid. $C_4H_5O_2Cl=MeCCl:CH.CO_2H$.

$k_A \times 10^5$ at $25^\circ=9.47$; increases on diln.

$\Lambda(32)=19$, $(1024)=95.7$, $(\infty)=357$; **1371**.

Na.A at 25° , $\Lambda(32)=68.4$, $(1024)=78.9$; **1368a**.

Chloro-dibromo-acetic acid. $C_2HO_2ClBr_2=CClBr_2.CO_2H$.

$k_A \times 10$ at 25° is about 3.

$\Lambda(32)=318.6$, $(1024)=351$, $(\infty)=353.8$.

Na.A at 25° , $\Lambda(32)=68.1$, $(1024)=78.2$; **1701**.

Chloro-difluoro-acetic acid. $C_2HO_2ClF_2=CClF_2.CO_2H$.

At 25° , $\Lambda(32)=379.8$, $(256)=391.0$; m. p. 22.9° .

Na.A at 25° , $\Lambda(32)=83.0$, $(64)=86.3$, $(\infty)=96.3$; **1690**.

m-Chloro-dimethyl-aniline. $C_8H_{10}NCl=Cl.C_6H_4.NMe_2$.

Weaker base than dimethyl-aniline, (hydrol. of B.HCl); **660**.

Chloroethyl alcohol see Glycol chlorohydrin.

Chloroform see Trichloro-methane.

Chloro-formic acid ethyl ester. (Chlorocarbonic acid ethyl ester).

$C_2H_3O_2Cl=ClCO_2Et$.

In SO_2 ; **1842**.

Effect of temperature on cond.; **106**.

2-Chlorogallic acid ethyl ester. (3,4,5-Trihydroxy-2-chloro-benzoic acid ethyl ester).

$C_9H_5O_6Cl=Cl.C_6H(OH)_3.CO_2Et$. [$CO_2H=1$.]

$k_A \times 10^7$ at $25^\circ=1.8$; m. p. $106^\circ-107^\circ$.

$\mu(24.2)=0.7$, $(193.6)=2.5$, $(\infty)=350$; **404**.

2-Chlorogallic acid methyl ester. (3,4,5-Trihydroxy-2-chloro-benzoic acid methyl ester). $C_9H_7O_6Cl$.

$k_A \times 10^7$ at $25^\circ=3.6$; diminishes on diln.; m. p. $159^\circ-160^\circ$.

$\mu(32)=1.2$, $(256)=2.7$, $(\infty)=351$; **404**.

Chlorohydrin. $C_2H_7O_2Cl=CH_2Cl.CH(OH).CH_2OH$.

$\kappa \times 10^7$ at $25^\circ=4.9$.

Cond. with Cu oleate; and as solvent; **1569**.

Chlorohydroxy- see Hydroxy-chloro-

Chloromaleic acid. $C_4H_3O_4Cl$.

In SO_2 , insol.; **1842**.

Chloromalonic acid. $C_3H_3O_4Cl=ClCH(CO_2H)_2$.

$k_A \times 10^3$ at 25° is about 4; m. p. 132° dec.; **1838**.

Second $k_A \times 10^4=1.94$ (cond.); **1911**.

At 25° , $\mu(32)=236$, $(1024)=411$, $(\infty)=358$; **1838**.

Chloromethyl- see Methylchloro-

Chloronaphthophenazonium see Chlorophenylnaphthophenazonium.

Chloronitro- see Nitrochloro-

o-Chloro-oxanilic acid. (Anilinochloro-oxalic acid. Chloroanilino-oxalic acid). $C_8H_5O_3NCl = CO_2H.CO.NH(C_6H_4Cl)$.

$k_A \times 10^2$ at $25^\circ = 2.03$; diminishes on diln.

$\mu(32) = 191.9$, $(1024) = 334.8$, $(\infty) = 351$; **1371**.

p-Chloro-oxanilic acid. $C_8H_5O_3NCl$.

$k_A \times 10^2$ at $25^\circ = 1.4$; increases on diln.

$\mu(256) = 285.8$, $(1024) = 330.0$, $(\infty) = 351$; **1371**.

o-Chlorophenol. $C_6H_5OCl = Cl.C_6H_4.OH$.

$k_A \times 10^{10}$ at $25^\circ = 7.7$ (catal.); **1150** and **733**, **1718**; $= 360$ (cond.); **70**.

$\Lambda(40.6) = 0.4$, $(324.8) = 1.6$, $(\infty) = 356$; **70**.

Cond. in Et alc.

Cond. with NaOH; **1508**, **1718**.

Na.A at 25° , $\Lambda(32) = 72.0$, $(1024) = 88.7$ aq.; **733**.

p-Chlorophenol. C_6H_5OCl .

$k_A \times 10^{10}$ at $25^\circ = 4.1$ (catal.); **1150** and **733**, **1718**; $= 210$; **70**.

$\Lambda(64) = 0.4$, $(512) = 2.3$, $(\infty) = 356$; **70**.

Cond. in Et alc.

Cond. with NaOH; **1508**, **1718**.

Chlorophenophenazonium see **Chlorophenylphenazonium**.

6-Chloro-o-N-phenylnaphthophenazonium hydroxide. $C_{22}H_{15}ON_2Cl$.

This compound, not isolated, exists in the solution of rosindone + $1NaOH$. At 0° , $\mu(512) = 110$ after two minutes.

$B.Cl = C_{22}H_{14}N_2Cl_2$ (Rosindone chloride) at 25° , $\mu(32) = 124.5$ extrapolated, $(1024) = 138.8$. Cond. with NaOH; **770**.

norm.-p-Chlorophenyl-nitromethane. $C_7H_5O_2NCl = Cl.C_6H_4.CH_2.NO_2$.

In 50% Me alc. at 1.1° , very small cond.; m. p. $33^\circ - 34^\circ$.

K salt and Na salt; **1464**.

iso-p-Chlorophenyl-nitromethane. $C_7H_5O_2NCl$.

In 50% Me alc., conducts well, but becomes transformed to the normal compound; m. p. 64° .

Na salt; **1464**.

3-Chloro-N-phenylphenazonium bromide. (Chloro-N-phenophenazonium bromide). $C_{18}H_{12}N_2ClBr$.

$\mu(64) = 82.8$, $(1024) = 101.1$; **770**.

4-Chloro-o-phthalic acid. $C_8H_5O_4Cl = Cl.C_6H_3(CO_2H)_2$. [$CO_2H = 1, 2$.]

$k_A \times 10^2$ at $25^\circ = 2.5$; extrapolated on account of great dissociation at small diln.

$\mu(64) = 259$, $(1024) = 446$, $(\infty) = 356$; **1372**.

Chloropicrin see **Nitrotrichloro-methane**.

α -Chloropropionic acid. $C_3H_5O_2Cl = Me.CHCl.CO_2H$.

$k_A \times 10^2$ at $25^\circ = 1.6$; diminishes on diln.; b. p. 82.5° @ 13.5 mm.

$\Lambda(32) = 71.6$, $(1024) = 237.2$, $(\infty) = 358$; **1099**.

β -Chloropropionic acid. $C_3H_5O_2Cl = CH_2Cl.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 8.6$; increases, then diminishes on diln.; m. p. 40° .

$\Delta(32) = 18.3$, $(1024) = 89.1$, $(\infty) = 358$; **1099**.

Chloro-salicylic acid see **2-Hydroxy-chlorobenzoic acid**.

o-Chlorosuccinanic acid. (Anilinochlorosuccinic acid. Chloroanilinosuccinic acid).

$C_{10}H_{10}O_3NCl = CO_2H.C_2H_4.CONH(C_6H_4Cl)$.

$k_A \times 10^5$ at $25^\circ = 2.1$; slight increase on diln.

$\mu(128) = 17.7$, $(1024) = 47.6$, $(\infty) = 350$; **1372**.

m-Chlorosuccinanic acid. $C_{10}H_{10}O_3NCl$.

$k_A \times 10^5$ at $25^\circ = 2.1$; slight increase on diln.

$\mu(128) = 17.4$, $(1024) = 47.2$, $(\infty) = 350$; **1372**.

p-Chlorosuccinanic acid. $C_{10}H_{10}O_3NCl$.

$k_A \times 10^5$ at $25^\circ = 2.1$; slight increase on diln.

$\mu(128) = 17.3$, $(1024) = 47.9$, $(\infty) = 350$; **1372**.

inact.-Chlorosuccinic acid. $C_4H_5O_4Cl = CO_2H.CHCl.CH_2.CO_2H$.

$k_A \times 10^3$ at $25^\circ = 2.94$; m. p. 153° – 154° ; **1824**, **1838**.

Second $k_A \times 10^5 = 3.6$ (cond.); **1911**.

At 25° , $\mu(32) = 92.2$, $(1024) = 294$, $(\infty) = 356$; **1838**.

d-Chlorosuccinic acid. $C_4H_5O_4Cl$.

$k_A \times 10^3$ at $25^\circ = 2.94$; m. p. 176° ; **1824**.

l-Chlorosuccinic acid. $C_4H_5O_4Cl$.

$k_A \times 10^3$ at $25^\circ = 2.94$; m. p. 176° ; **1824**.

p-Chlorotoluene. C_7H_7Cl .

In NH_3 , qual.; **606**.

β -Chloro-trimethylene diamine. $C_3H_9N_2Cl = CHCl(CH_2.NH_2)_2$.

B.2HCl at 25° , $\Delta(32) = 106.9$, $(1024) = 127.8$; **270**.

δ -Chlorovaleric acid. $C_5H_9O_2Cl = CH_2Cl.(CH_2)_3.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 2$; b. p. 141° – 149° @ 12 mm. with dec.

$\Delta(32) = 9$, $(1024) = 47.8$, $(\infty) = 354$; **1099**.

Chromicyanic acid. $C_6H_3N_6Cr = H_3Cr(CN)_6$.

3K.A at 25° , $\Delta(32) = 130.5$, $(1024) = 160.8$; **1837**.

Chromioxalic acid. $C_6H_3O_{12}Cr = H_3Cr(C_2O_4)_3$.

3NH₄.A; **1192**, **1198**, **1516**. – 3K.A; **971**, **1515**, **1516**. – 3Ag.A;

971. – 3Na.A at 25° , $\Delta(32) = 73.2$, $(1024) = 105.6$; **1516**,

1192, **1198**.

Chromithiocyanic acid. $C_6H_3N_6S_3Cr = H_3Cr(CNS)_6$.

3NH₄.A; compound with acetic acid; **1164**. – 3K.A; **1192**, **1641**.

– 3 Na.A at 25° , $\Delta(20) = 265$, $(1280) = 344$; **1192**. – Compound with urea; **1944**.

Chromium see **Chromicyanic acid**, **Chromioxalic acid**, **Chromithiocyanic acid** and **Chromium complex salts**.

Chromium complex salts.

320b, **1164**, **1384**, **1487**, **1515**, **1516**, **1573**, **1641**, **1944**.

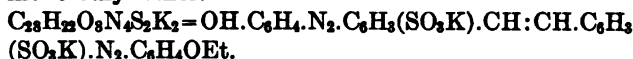
allo-Chrysoketonecarboxylic acid. $C_{18}H_{10}O_3$.

Comparative strength (colorim.); m. p. 285° – 286° with dec.; 1665.

allo-Chrysoketonecarboxylic acid ethyl ester. $C_{20}H_{14}O_3$.

Comparative strength; m. p. 187° – 188° ; 1665.

Chrysophenine. A salt of Stilbenedisulphonic acid disazophenol mono ethyl ether.



At 90° , $\mu(200)=424$, $(1600)=512$; 976a.

Chyle. [The references to this are incomplete.]

Cond.; 253.

Cinchomeric acid see Pyridine-3,4-dicarboxylic acid.

iso-Cinchomeric acid see Pyridine-2,5-dicarboxylic acid.

Cinchona. [The references to this are incomplete.]

Cond. of dil. soln. of bark; 146.

Cinchonamine. $C_{19}H_{21}ON_2$.

$k_B \times 10^5$ at 15° is less than 1 (colorim.).

Second $k_B \times 10^{10}$ is about 3 (colorim.); 1776.

Cinchonidine. $C_{19}H_{21}ON_2$.

$k_B \times 10^7$ at $15^\circ=3.72$ (hydrol.); 1779.

Second $k_B \times 10^{10}$ is about 3.3 (colorim.); 1776.

In NH_3 , qual.; 606.

With allyl thiocarbimide, no cond.; 1223. Relative strength; 1631.

B.HCl at 25° , $\Lambda(32)=76.9$, $(1024)=91.1$; 270. – $2B.H_2SO_4$; 1611.

Cinchonine. $C_{19}H_{21}ON_2$.

$k_B \times 10^6$ at $15^\circ=0.16$ (hydrol.); 1779. At $18^\circ=1.2$; 1224.

Second $k_B \times 10^{10}$ is about 3.3 (colorim.); 1776.

At 18° , $\mu(14020)=24$, $(\infty)=194$; 1224.

Cond. with acids and phenols in Me alc. and acetone; 1620.

B.HCl at 25° , $\Lambda(64)=82.1$, $(1024)=90.9$; 270; 177, 1224. Salts of organic acids; 1620.

Cinchoninic acid. (Quinoline-4-carboxylic acid. γ -Quinoline carboxylic acid). $C_{10}H_7O_2N=C_6H_4.C_3H_2N.CO_2H$.

$k_A \times 10^5$ at $25^\circ=1.3$.

$\mu(64)=9.9$, $(1024)=37.2$, $(\infty)=355$; 1372.

Cinenic see Cineolenic.

Cineole. (Eucalyptole). $C_{10}H_{18}O$.

At 22° , almost no cond. With HCl, shows almost complete hydrolysis; 1553.

Cineolenic acid. (Cinenic acid). $C_9H_{16}O_3=C_8H_{15}O.CO_2H$.

(a). Acid; m. p. 83° – 84° . At 18° , $\mu(32)=52.2$, $(1024)=62.5$; [this apparently means the conductivity of a salt]; 1544.

(b). *β -stable* Acid; b. p. 124.5°–125° @ 12 mm. At 20°, $\mu(32)=62.1$, (1024)=73.5; [this apparently means the conductivity of a salt]; 1546.

Cineolic acid. $C_{10}H_{16}O_5=C_8H_{14}O.(CO_2H)_2$.

$k_A \times 10^4$ at 25°=1.17 aq.

$\mu(32)=20.6$, (1024)=102, (∞)=350.

Cond. with boric acid; 1186.

At 18°, $\mu(32)=125.1$, (1024)=146.4; [this apparently means the conductivity of a salt]; 1544.

Cinnamenyl- see Styryl-

Cinnamic acid. (*β -Phenylacrylic acid*). $C_9H_8O_2=Ph.CH:CH.CO_2H$.

$k_A \times 10^5$ at 0°=3.2. At 5.2°=3.4; 1968a. At 18°=3.5 (colorim.);

1563, 1781. At 25°=3.6; 507, 1371, 1581, 1968, 1968a. At

35°=3.7; 1968a. At 40°=4.1 aq. At 50°=4.0 aq. At 60°=

4.0 aq. At 70°=3.8 aq. At 80°=3.7 aq. At 90°=3.4 aq.

At 99°=3.2 aq.; 1581. See also the isomeric cinnamic acids.

Cond. at 0°–35°; 1968, 1968a, 1581. At 25°, $\Lambda(256)=32.2$, (1024)=61.3, (∞)=352; 1371.

In HCl, good cond.; in HBr, slight cond.; 30. In HCN, no cond.; 943. In NH_3 , qual.; 606. In pyridine; 754.

Na.A at 25°, $\Lambda(32)=64.3$, (1024)=73.8; 1368a; also 1275, 1968a. At 25°–99°; 1581.

Cinnamic acid ethyl ester. $C_{11}H_{12}O_2$.

Effect of temperature on cond.; 106.

Isomeric cinnamic acids.

Erlenmeyer has found four isomeric acids which (according to their source) are grouped in two pairs, the storax and the hetero acids. See 507 and Ber. Deutsch. Chem. Ges. 43, 453, 955 and 1076.

	At 25°	m. p.	$k_A \times 10^5$	$\Lambda(320)$	(1269)	(∞)
Storax α -acid.	134°–135°.		3.62.	38.2	72.9	374.7.
Storax β -acid.	132°–133°.		3.70.	38.8	77.5	374.7.
Hetero α -acid.	130°–131°.		3.50.	37.6	72.2	374.7.
Hetero β -acid.	128°.		3.59.	38.1	71.8	374.7;
						507.

allo- and iso-Cinnamic acids. There is, at present, an agreement that there are three isomeric forms of m. p. 42°, 58° and 68°, and that any one of these may be transformed into any one of the other isomers having a different melting-point. See Ber. Deutsch. Chem. Ges.; 34, 3641; 36, 901; 38, 2562, 3496; 39, 1570; 42, 182, 521, 1027, 1443, 4659, 4865; 43, 411; 44, 2739, 2966. The acids which were first prepared often contained some cinnamic acid, giving too high conductivity values.

Isomer m. p. 42°. The *iso*-acid of Erlenmeyer, Sr.

$k_A \times 10^4$ at 25°=1.38; 179a, 1103, 1105. $\Delta(0.1.1)=30.3$, (511)=87.6, (∞)=374; 179a.

Isomer m. p. 58°. The *iso*-acid of Liebermann.

$k_A \times 10^4$ at 25°=1.41; 179a; 70, 1102, 1105, 1373. $\Delta(50.6)=30.3$, (506)=87.7, (∞)=374; 179a.

Isomer m. p. 68°; *allo*-cinnamic acid.

$k_A \times 10^4$ at 25°=1.42; 179a, 1103, 1105. $\Delta(50.3)=30.5$, (503)=87.7, (∞)=374; 179a.

Cinnamic alcohol. $C_9H_{10}O$.

In NH_3 , qual.; 606.

Cinnamic aldehyde. $C_9H_8O=Ph.CH:CH.CHO$.

α is too small to measure; 1553.

In NH_3 , qual.; 606.

Cond. with HCl, qual.; 1553. Compound with H_2SO_3 ; (hydrol.); 961.

Cinnamon. [The references to this are incomplete.]

Cond. of dil. soln. of bark; 146.

Cinnamyl chloride. $C_9H_7OCl=Ph.CH:CH.COCl$.

In SO_2 ; 1842.

Citraconanilic acid. (Mesaconanilic acid. Methylmaleinanilic acid).

$C_{11}H_{11}O_3N$.

$NH_4.A$, $\Delta(33.0)=63.2$, (1057)=76.2; m. p. 65°–80° with dec.; (free acid has m. p. 151°–153°); 1749.

Citraconic acid. $C_6H_6O_4=CO_2H.CH:CH.CO_2H$.

$k_A \times 10^5$ at 0°=4.36; 1968a;=3.69 aq.; diminishes on diln.; 1018.

At 12°=4.07; 1968a. At 17°=3.61 aq.; diminishes on diln.;

164. At 18°=3.7 (colorim.); 1563, 1781. At 25°=3.81;

1968a;=3.44; diminishes on diln.; 1372; 1500b. At 35°=3.63; 1968a.

Second $k_A \times 10^7=3.9$ (inversion); 1335 and 1745;=2.4 (inversion); 1638.

At 25°, $\mu(68.3)=135.0$, (1092)=288.0, (∞)=355; 1372. Also, 170, 1500b. $\mu(32)=103.0$, (1024)=289.1; 1968a.

In NH_3 , qual.; 606.

Cond. with KOH; 170.

K.A; 170. – 2Na.A at 25°, $\mu(32)=77.7$, (1024)=96.6; 1367, 1838. – NaH.A; 1838.

Citraconic acid anhydride. $C_6H_4O_3$.

$\alpha \times 10^7$ at 0°=0.958. At 25°=2.02; 1844, 1843.

As solvent of NEt_4I ; 1844. Cond. of soln. showing change to acid; 1500b.

Citric acid. $C_6H_8O_7=CO_2H.CH_2.C(OH)(CO_2H).CH_2.CO_2H$.

$k_A \times 10^4$ at 0°=6.9. At 18.1°=8.4; 1968a. At 18.5°=7.9 aq.;

164. At 25° = 8.2; m. p. 152° – 154° ; 1839, 1859; = 8.7; 1968a; (colorim.); 1643. At 35° = 9.1; 1968a.
 Second $k_A \times 10^5$ = 3.2 (inversion); 1638.
 Third $k_A \times 10^7$ = 7.0 (inversion); 1638.
 Cond.; 172, 454, 591, 691, 692, 910, 1122, 1243, 1495, 1968a.
 At 25° , $\mu(64)$ = 71.9, (1024) = 212, (∞) = 352; 1839. $\mu(32)$ = 52.7, (1024) = 218.1, (∞) = 345; 1968a.
 In HBr and in HCl, no cond.; 30. In NH_3 , qual.; 606. In ether, no cond.; 366.
 Cond. with boric acid; 1839; qual.; 1184. With MoO_3 ; 691, 1495. With KOH; 172. With NaOH; 454. Under pressure of 1–500 atmospheres; 220. E. m. f.; 1639b.
 2Mg.3A; 1836. – Acid K salt; 164. 3K.A at 0° – 100° ; 1338 and 889; also, 164, 172, 495, 588. Under pressure of 1–500 atmospheres; 220. – Na.A. – 2 Na.A. – 3Na.A at 25° , $\mu(32)$ = 81, (1024) = 109; 1838. 454, 1199, 1367. With boric acid; 1199. Complex with MoO_3 and WO_3 ; 692. With NaCl and NaOH; 1227. With UO_2 .A; 449. – 3UO_2 .2A alone, and with 3Na.A; 449.
Citric acid triethyl ester. $\text{C}_{12}\text{H}_{20}\text{O}_7$.
 In NH_3 , qual.; 606.
Citronella aldehyde see Citronellal.
Citronellal. (Citronella aldehyde). $\text{C}_{10}\text{H}_{18}\text{O}$.
 Compound with H_2SO_4 ; (hydrol.); 961.
Citronellideneacetic acid. $\text{C}_{12}\text{H}_{20}\text{O}_2$.
 The acid (a mixture of isomers) was too insol. to measure cond.; 1545.
Clupeine. $\text{C}_{30}\text{H}_{57}\text{O}_6\text{N}_{17}$.
 B. Carbonate shows an increase of cond. after digestion with trypsin; 145b.
Cobalt.
 In complex salts. With dimethyl-glyoxime; 1751, 1753, 1754, 1756, 1757, 1759, 1760a, 1761. With ethyl amine; 1751, 1757. With ethylene diamine; 1415, 1417, 1948, 1949. With methylethyl glyoxime; 1759. With pyridine; 1481, 1482, 1751, 1757, 1760a. See also 1384, 1385, 1481, 1526, 1947.
 See also the following compounds.
Cobalticyanic acid. $\text{C}_6\text{H}_5\text{N}_6\text{Co} = \text{H}_3\text{Co}(\text{CN})_6$.
 3K.A at 25° , $\Lambda(32)$ = 121.5, (1024) = 151.4; 1832, 971.
Cobaltophenylthioacetic acid. $\text{C}_{16}\text{H}_{14}\text{O}_4\text{S}_2\text{Co} = \text{Co}(\text{S.CHPH.CO}_2\text{H})_2$.
 2Na.A, $\mu(32)$ = 55.1, (1024) = 80.6; 1385.
Cobaltothiocyanic acid. $\text{C}_4\text{H}_2\text{N}_4\text{S}_4\text{Co} = \text{H}_2\text{Co}(\text{SCN})_4$.
 2NH₄.A at 25° , $\mu(32)$ = 39.1, (512) = 72.9; 1527.

Cobaltothiophenyl- see **Cobaltophenylthio-**

l-Cocaine. (Benzoylecgonine methyl ester). $C_{17}H_{21}O_4N$.

$k_B \times 10^7$ at 14° to $18^\circ = 4$ (colorim.); **1779, 1778.**

In HCN, fair cond.; **943.**

B.HCl at 25° , $\Lambda(32) = 79.7$, (1024) = 91.7; **270.** In SO_2 ; **1842.**

In NH_3 , qual.; **606.** - B. HNO_3 , in SO_2 ; **1842.**

r-Cocaine. $C_{17}H_{21}O_4N$.

B.HCl at 25° , $\Lambda(32) = 78.9$, (1024) = 90.8; **270.**

Codeine. $C_{18}H_{21}O_3N$.

In NH_3 , qual.; **606.**

B.HCl at 25° , $\Lambda(32) = 78.3$, (1024) = 91.0; **270.**

Coerulein. $C_{20}H_{10}O_6$; also given as $C_{20}H_8O_6$.

In $MeNH_3$, poor cond.; **637.**

Collidine see **2,4,6-Trimethyl-pyridine.**

Columbium. (Niobium).

Complex with oxalic acid. NH_4 , K, Rb, and Na salts; **1550.**

Comanamic acid. (β -Hydroxy-picolinic acid).

$C_6H_5O_2N = C_5H_5O.NH(CO_2H)$.

$k_A \times 10^4 = 2.66$.

$\mu(64) = 46.1$, (256) = 87.3, (∞) = 380; **1407.**

Comanic acid. (1,4-Pyrone-2-carboxylic acid).

$C_6H_4O_4 = C_5H_3O_2(CO_2H)$.

$k_A \times 10^2 = 2.8$; m. p. 252° .

$\mu(128) = 311$, (512) = 357.9, (∞) = 380; **1407.**

Comenamic acid. (Dihydroxy-picolinic acid).

$C_6H_5O_4N = C_5H_3O(NH)(CO_2H)(OH)$.

$k_A \times 10^4 = 2.45$.

$\mu(512) = 112.6$, (1024) = 148.5, (∞) = 379; **1407.**

Comenic acid. (1,4-Pyrone-5-hydroxy-2-carboxylic acid).

$C_6H_4O_5 = (OH)C_5H_2O_2(CO_2H)$.

$k_A \times 10^2 = 2$.

$\mu(128) = 292.2$, (512) = 347.6, (∞) = 380; **1407.**

Condurango. [The references to this are incomplete.]

Cond. of soln. of bark; **146.**

Congo Red.

This is a sodium salt, usually the salt of Benzidine-tetrazo-dinaphthylamine-disulphonic acid. $C_{23}H_{24}O_6N_6S_2$.

Colloidal solution of free acid at 25° , $\Lambda = 5$.

Na salt (= Congo Red) at 25° , $\Lambda(800 \text{ to } 3200)$ is about 110; **1402.**

$\Lambda(32) = 58.7$, (1024) = 96.1; **186a.**

d-Coniine. (2-Propyl-hexahydro-pyridine). $C_8H_{17}N$.

$k_B \times 10^3$ at $25^\circ = 1.32$ aq.; 16% too high; **271; 1241.**

At 25° , $\mu(32) = 36.4$, (256) = 83.0, (∞) = 195; **271; 1241, 2014.**

In HCN, very little cond.; **943**.

B.HCl at 25°, $\Delta(32)=84.1$, $(1024)=94.9$; **270**.

Conquinine see **Quinidine**.

Copper. In complex salts; **1008**, **1524**, **1530**, **1750**, **1755**.

See also **Cupricyanic acid** and **Cuprocyanic acid**.

Cotarnine. $C_{12}H_{15}O_4N$.

$k_B \times 10^8$ at 0°=2; **763**. At 15° is over 1 (hydrol.); **1779**. At 25°=5; diminishes on diln; **763**.

At 25°, $\mu(128)=124.2$, $(1024)=148.2$, $(\infty)=226$; - B.HCl + Ag_2O , $\mu(128)=139.5$; **763**.

B.HCl at 25°, $\mu(32)=86.6$, $(1024)=96.9$; **763**, **764**. With KCN; **764**. - B.CN; **764**.

Cotarnine cyanide. $C_{12}H_{14}O_3N_2$.

At 25°, $\mu(1024)=26.1$; also in Et alc.; **764**.

o-Coumaric acid. (o-Hydroxy-cinnamic acid).

$C_9H_8O_3=C_6H_4(OH).CH:CH.CO_2H$.

$k_A \times 10^5$ at 25°=2.2; m. p. 208.5°; **1186**, **1371**.

$\Delta(256)=25.3$, $(1024)=48.2$, $(\infty)=352$; **1371**.

In HBr, no cond.; **30**. In Et alc.; **1185**, **1508**, **1718**.

Cond. with boric acid; **1185**. With NaOH; **1508**, **1718**.

m-Coumaric acid. (m-Hydroxy-cinnamic acid). $C_9H_8O_3$.

Cond. in Et alc., alone and with NaOH; m. p. 191°; **1508**, **1718**.

p-Coumaric acid. (p-Hydroxy-cinnamic acid). $C_9H_8O_3$.

$k_A \times 10^5$ at 25°=2.16; diminishes on diln.

$\Delta(128)=18.1$, $(1024)=47.9$, $(\infty)=352$; **1371**.

Coumarin. $C_9H_6O_2$.

In NH_3 , qual.; **606**.

Creatine see **Methylguanidine-acetic acid**.

Creatinine. (Methylguanidine-acetic acid anhydride?). $C_4H_7ON_3$.

$k_B \times 10^{11}$ at 40°=3.69 (sapon.); **1995** and **1150**. At 40.2°=3.57 (sapon.); **1995**.

o-Cresol. $C_7H_8O=Me.C_6H_4.OH$.

$k_A \times 10^8$ at 25°=4.2.

$\Delta(19.3)=0.3$, $(38.7)=0.5$, $(\infty)=356$; **70**.

In HBr; **29**. In HBr, good cond.; in HCl and HI, poor cond.; in H_2S , no cond.; **1897**. In NH_3 , qual.; **606**.

Cond. with NaOH and HCl; **1508**.

m-Cresol. C_7H_8O .

$k_A \times 10^8$ at 25°=1.7.

$\Delta(20)=0.2$, $(160)=0.8$, $(\infty)=356$; **70**.

In HBr; **29**. In NH_3 , qual.; **606**.

Cond. with NaOH and HCl; **1508**. As solvent; **73**.

p-Cresol. C_7H_8O .

$k_A \times 10^8$ at 25°=1.1.

$\Lambda(28.8)=0.2$, $(115.2)=0.5$, $(\infty)=356$; **70**.

In HBr; **29**. In HBr, good cond.; in H_2S , no cond.; **1897**. In NH_3 , qual.; **606**.

Cond. with NaOH and HCl; **1508**.

Cresotinic acid see Hydroxy-toluic acid.

Croconic acid. $C_5H_2O_5 = C_5O_3(OH)_2$?

At 25° , $\mu(27.9)=359.4$, $(1787.4)=621.1$, $(\infty)=775$.

K salt. - Na salt at 25° , $\mu(32)=175.5$, $(1024)=228.8$; **389**.

α -Crotonic acid. $C_4H_6O_2 = Me.CH:CH.CO_2H$.

$k_A \times 10^5$ at $0^\circ=1.99$. At $12^\circ=2.10$. At $25^\circ=2.15$; **1968a**; $=2.04$; **1184**, **1371**; (colorim.); **951**, **1781**. At $35^\circ=2.11$; **1968a**.

At 25° , $\Lambda(32)=8.9$, $(1024)=47.5$, $(\infty)=357$; **1371**. $\Lambda(32)=9.1$, $(1024)=48.0$, $(\infty)=352$; **1968a**.

Cond. of satd. soln.; **943**. At 0° to 35° ; **1968a**.

In HCN, little cond.; **943**. In NH_3 , qual.; **606**.

Cond. with boric acid; **1184**.

Gl complex salt; **1711**. - Na.A at 25° , $\Lambda(32)=69.0$, $(1024)=78.8$; **1368a**; **1640**, **1968a**.

β -Crotonic acid. (*iso*-Crotonic acid). $C_4H_6O_2 = Me.CH:CH.CO_2H$.

$k_A \times 10^5$ at $25^\circ=3.6$; diminishes on diln. because of presence of α -crotonic acid.

At 25° , $\Lambda(32)=11.3$, $(1024)=55.5$, $(\infty)=357$; **1371**.

Gl complex salt; **1711**. - Na.A at 25° , $\Lambda(32)=69.3$, $(1024)=78.9$; **1368a**.

Crystal Ponceau. (Crystal Scarlet 6 R. Ponceau 6 R). $C_{20}H_{14}O_7N_2S_2$.

The dye is the disodium salt of α -Naphthalene-azo- β -naphthol-disulphonic acid. $C_{10}H_7.N_2.C_{10}H_4(OH)(SO_3H)_2$.

Free acid at 25° , $\mu(100)=344.7$, $(1600)=368.1$; **1402**; - **1401**.

Mg.A. - 2Na.A (Ponceau) at 25° , $\mu(100)=82.4$, $(1600)=89.2$; **1402**. Cond. with Methylene Blue; **1401**.

Crystal Scarlet see Crystal Ponceau.

Crystal Violet see Hexamethyl-triamino-triphenyl carbinol.

Cubebin. $C_{10}H_{10}O_8$.

In NH_3 , qual.; **606**.

Cumaric see Coumaric.

Cumene. $C_9H_{12} = Me_2CH.Ph$.

$\kappa \times 10^{11}$ at $18^\circ=6$; **386**.

In HBr, no cond.; **1897**. In NH_3 , insol.; **606**.

Cond. with m-xylene; **386**.

pseudo-Cumencarboxylic acid see 2,4,5-Trimethyl-benzoic acid.

pseudo-Cumene diazonium hydroxide. (Diazo *pseudo*-cumene).

$C_9H_{12}ON_2 = Me_3.C_6H_2.N_2.OH$. [Me=1, 2, 4.]

At 0° , $\mu(128)=107$, $(\infty)=135$; **501**.

B.Cl. - B.CN at 0° , $\mu(512)=50.6$; **735**.

pseudo-Cumenesulphone-aminoacetic acid. (*pseudo*-Cumenesulphone-glycine). $C_{11}H_{15}O_4NS = (Me_3.C_6H_5.SO_2)NH.CH_2.CO_2H$.

$k_A \times 10^4$ [at 25°] = 2.48.

$\Lambda(256) = 77.1$, $(1024) = 135.1$, $(\infty) = 347$.

Na.A [at 25°], $\Lambda(32) = 59.6$, $(1024) = 68.3$; **1134**.

2-pseudo-Cumene-5-sulphonic acid. (1,2,4-Trimethyl-benzene-5-sulphonic acid). $C_9H_{13}O_3S = Me_3.C_6H_3.SO_3H$.

At 25° , $\Lambda(32) = 319.5$, $(1024) = 352.6$; **1366**.

K.A; **1366**. - Ag.A; **1111**. - Na.A at 25° , $\Lambda(32) = 62.5$, $(1024) = 75.2$; **1366**.

Cumic acid see **Cuminic acid**.

sym.-pseudo-Cumidine. $C_9H_{13}N = Me_3.C_6H_3.NH_2$. [Me = 1, 2, 4; $NH_2 = 5$.]

$k_B \times 10^3$ at $18^\circ = 4.8$ (colorim.); **1777**. At $25^\circ = 1.72$ (solub.); **1116**.

In benzene, no cond.; **1802**.

B.HCl at 25° , $\Lambda(64) = 89.1$, $(256) = 93.7$; **270**. Effect of diazotization; **1601**. - B.Picrate in benzene, no cond.; **1802**.

Cuminic acid. (Cumic acid. *p*-iso-Propylbenzoic acid).

$C_{10}H_{13}O_2 = iso-Pr.C_6H_4.CO_2H$.

$k_A \times 10^5$ at $18^\circ = 3.35$ (colorim.); **1563**. At $25^\circ = 5$; **1371**.

At 25° , $\Lambda(512) = 52.2$, $(1024) = 70.9$, $(\infty) = 350$; **1371**.

Cumophenolcarboxylic acid.

$C_{10}H_{12}O_3 = C_6H_7.C_6H_3(QH).CO_2H$. [$CO_2H = 1$; $OH = 6$; $C_6H_7 = 3$.]

$k_A \times 10^4$ at $25^\circ = 7.38$ aq.; diminishes on diln.; m. p. 121.5° .

$\mu(800) = 185$, $(1600) = 225$, $(\infty) = 350$.

Cond. with boric acid; **1186**.

Cupricyanic acid. $C_5H_2N_2Cu = 2HCN.CuCN$.

2Na.A at 25° , $\mu(32) = 102.7$, $(1024) = 117.2$; **690**.

Cuprocyanic acid. $C_4H_3N_4Cu = 3HCN.CuCN$.

3K.A. - 3Na.A at 25° , $\mu(32) = 108.2$, $(1024) = 128.8$; **690**.

Cyan- see **Cyano-** for most compounds.

Cyanic acid. $CHON = NC.OH$.

$k_A \times 10^4$ at $0^\circ = 1.2$; **1309a**.

$NH_4.A$; **552**, **1886**. - K.A at 18° , $\Lambda(100) = 109.4$, $(1000) = 121.2$; **1309a**. Cond. of satd. soln.; and cond. in HCN; **943**. In

NH_3 , qual.; **606**. - Ag.A in HCN, qual.; **943**.

Cyanine. $C_{29}H_{35}N_3I$ or $C_{30}H_{39}N_3I$.

$k_B \times 10^6$ at $18^\circ = 4.2$ (colorim.); **1562**.

In HCN, no cond.; **943**. In Et alc., cond. increased by light; **1321**.

Cyanoacetic acid. $C_3H_3O_2N = CH_2(CN).CO_2H$.

$k_A \times 10^3$ at $25^\circ = 3.73$; diminishes on diln.; **1370**; (neutral.); **295**.

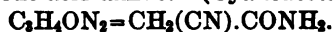
Cond. of satd. soln.; **943**. At 25° , $\Lambda(32)=105.3$, $(1024)=297.3$, $(\infty)=362$; **1370**. - **294**.

In HCl, poor cond.; in HBr and H_2S , no cond.; **1897**. In HCN; **943**. In Et alc.; **647**, **1820**. In acetone and in soln. of sugar; **1820**.

Cond. with acetic acid; **1821**. With KOH; **294**.

Na.A in alc.; **647**. - K.A; **294**.

Cyanoacetic acid amide. (Cyanoacetamide).



In NH_3 ; **610**.

Cond. with $HgCl_2$; **1097**.

Cyanoacetic acid ethyl ester. $C_5H_7O_2N=CH_2(CN).CO_2Et$.

$\kappa \times 10^7$ at $0^{\circ}=1.9$; **1844**. At $25^{\circ}=3.6$; b. p. $98^{\circ}-99^{\circ}$ @ 18 mm.; **1106**, **1107**, **1843**, **1844**.

At 25° , $\Lambda(250)=0.45$, $(500)=0.51$; **1831**.

Cond. as solvent; **1106**, **1107**, **1844**.

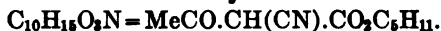
Cyanoacetic acid methyl ester. $C_4H_5O_2N$.

$\kappa \times 10^7$ at $-51^{\circ}=0.2$. At $-31^{\circ}=1.0$; **1853a**. At $0^{\circ}=3.17$; **1844**, **1853a**. At $25^{\circ}=4.49$; b. p. about 202° ; **1843**, **1844**, **1853a**.

At 25° , $\Lambda(32)=0.31$, $(64)=0.38$; **698**.

As solvent; **1844**, **1853a**.

Cyanoacetoacetic acid iso-amyl ester.



$k_A \times 10^4$ at $25^{\circ}=5.8$; b. p. 168° @ 46 mm.

$\Lambda(1024)=185.3$, $(\infty)=351$.

Na.A at 25° , $\Lambda(1024-32)=10-12$; **699**.

Cyanoacetoacetic acid iso-butyl ester. $C_9H_{13}O_3N$.

$k_A \times 10^4$ at $25^{\circ}=7$; diminishes on diln.; b. p. 142° @ 32 mm.; **699**.

$\Lambda(512)=155.5$, $(1024)=190.5$, $(\infty)=352$; **699**.

Na.A at 25° , $\Lambda(32)=65.3$ $(1024)=77.3$; **700**; - **699**.

Cyanoacetoacetic acid ethyl ester. $C_7H_9O_3N$.

$k_A \times 10^4$ at $25^{\circ}=6.5$; diminishes on diln.

$\Lambda(64)=65.1$, $(1024)=181.4$, $(\infty)=353$.

Na.A at 25° , $\Lambda(32)=63.6$, $(1024)=74.4$; **698**.

Cyanoacetoacetic acid methyl ester. $C_6H_7O_3N$.

$k_A \times 10^4$ at $25^{\circ}=8.5$; diminishes on diln.

$\Lambda(64)=73.4$, $(1024)=200.0$, $(\infty)=356$.

Na.A at 25° , $\Lambda(32)=65.6$, $(1024)=78.1$; **698**, **700**.

Cyanoacetoacetic acid propyl ester. $C_8H_{11}O_3N$.

$k_A \times 10^4$ at $25^{\circ}=5.9$; diminishes on diln.; m. p. $35^{\circ}-36^{\circ}$.

$\Lambda(128)=84.4$, $(1024)=180.4$, $(\infty)=352$; **699**.

Na.A at 25° , $\Lambda(32)=65.7$, $(1024)=78.3$; **700**; **699**.

Cyanoamide. $\text{CH}_3\text{N}_2=\text{CN.NH}_2$.Aq. soln., almost no cond.; **70**.In NH_3 ; **610**. B.2HCl at 25° , $\mu(30)=743$; **779**.**Cyanoaminocarbonic acid ethyl ester.** $\text{C}_4\text{H}_5\text{O}_2\text{N}_2=(\text{CN})\text{NH.CO}_2\text{Et}$. $k_A \times 10^4$ at $25^\circ=4.7$. $\Delta(49.6)=50.8$, $(793.6)=157.7$, $(\infty)=352$; **70**. $\text{K.A.} - \text{Na.A}$ at 25° , $\Delta(32)=70.4$, $(1024)=79.4$; **270**.**m-Cyanobenzoic acid.** $\text{C}_8\text{H}_5\text{O}_2\text{N}=\text{CN.C}_6\text{H}_4.\text{CO}_2\text{H}$. $k_A \times 10^4$ at $25^\circ=1.99$. $\Delta(133.3)=52.9$, $(1066.7)=129.5$, $(\infty)=354$; **1371**.**Cyanobenzoylacetic acid methyl ester.** $\text{C}_{11}\text{H}_9\text{O}_3\text{N}=\text{PhCO.CH(CN).CO}_2\text{Me}$. Na.A at 25° , $\Delta(32)=63.0$, $(1024)=75.0$; **700**.**Cyanobutyrylacetic acid methyl ester.** $\text{C}_8\text{H}_{11}\text{O}_3\text{N}=\text{C}_3\text{H}_7\text{CO.CH(CN).CO}_2\text{Me}$. $k_A \times 10^4$ at $25^\circ=6.3$; diminishes on diln.; b. p. 135.3° @ 25 mm. $\Delta(128)=86.6$, $(1024)=184.0$, $(\infty)=351$; **699**. Na.A at 25° , $\Delta(32)=65.2$, $(1024)=77.8$; **700, 699**.**Cyano-iso-butyrylacetic acid methyl ester.** $\text{C}_8\text{H}_{11}\text{O}_3\text{N}$. $k_A \times 10^4$ at $25^\circ=5.0$; b. p. 139° @ 48 mm. $\Delta(512)=138.7$, $(1024)=178.0$, $(\infty)=351$; **699**. Na.A at 25° , $\Delta(32)=64.8$, $(1024)=77.8$; **700, 699**.**Cyanoform.** (*iso*-Cyanoform. Tricyano-methane). $\text{C}_4\text{HN}_3=\text{HC(CN)}_3$.At 25° , $\mu(64)=346.5$, $(1024)=358.3$. Na.A at 25° , $\mu(64)=81.6$, $(1024)=87.5$; **769**.**Cyanoformylacetic acid methyl ester.** (Hydroxymethylene-cyanoacetic acid methyl ester). $\text{C}_5\text{H}_5\text{O}_3\text{N}=\text{CHOH:C(CN).CO}_2\text{Me}$. $k_A \times 10^2$ at $25^\circ=1.56$; diminishes on diln. $\Delta(32)=188.6$, $(1024)=321.5$, $(\infty)=378.0$; m. p. 136° - 137° . Na.A at 25° , $\Delta(32)=74.4$, $(1024)=86.4$; **226**.**Cyanogen.** (Dicyanogen. Oxalic acid nitrile.) $\text{C}_2\text{N}_2=\text{NC.CN}$. $\kappa \times 10^9$ at 0° is less than 7; **367, 369**.Cond. in aq.; **1309a**.**Cyanogen iodide.** CNI .Cond. with allyl thiocarbimide; **1223**.**Cyanomalonic acid diethyl ester.** $\text{C}_8\text{H}_{11}\text{O}_4\text{N}=\text{CH(CN).(CO}_2\text{Et)}_2$. $k_A \times 10^2$ at $25^\circ=3.7$. $\mu(64)=265.3$, $(1024)=331.8$, $(\infty)=350$; **698**. Na.A at 25° , $\mu(32)=59.9$, $(1024)=72.0$; **698, 700**.**Cyanonitrosoacetic acid.** (Cyanoketoxime-carboxylic acid. Cyano-oximinoacetic acid). $\text{C}_3\text{H}_2\text{O}_3\text{N}_2=\text{CN.C(N.OH).CO}_2\text{H}$. $k_A \times 10^2$ at $25^\circ=1.39$; diminishes on diln. $\mu(32)=174.2$, $(512)=321.4$, $(\infty)=363$; **768**.

Cyanonitrosoacetic acid ethyl ester. $C_5H_6O_3N_2 = CN.C(N.OH).CO_2Et$. $k_A \times 10^5$ at $25^\circ = 2.28$; m. p. $128^\circ-129^\circ$; **1295, 1390**.At 25° , $\mu(32) = 10.1$, $(1024) = 53.4$, $(\infty) = 380.6$; **1295**.In Me alc.; **1390**. In pyridine; **754**.Na.A at 25° , $\mu(64) = 76.7$, $(1024) = 82.9$; **1295**. In Me alc.; **1390**.**Cyanonitrosoacetic acid methyl ester.** $C_4H_4O_3N_2$. $k_A \times 10^5$ at $0^\circ = 1.32$ aq. At $18^\circ = 2.21$ aq.; **1296**. At $25^\circ = 3.15$ (extrapolated); m. p. 119° ; **1295**; $= 2.61$ aq.; **1296**. At $35^\circ = 3.08$ aq. At $40^\circ = 3.24$ aq.; **1296**.At 25° , $\mu(32) = 11.9$, $(1024) = 59.5$, $(\infty) = 383.4$; **1295**.Na.A at 25° , $\mu(32) = 74.8$; **1296**. $\mu(64) = 78.1$, $(1024) = 85.6$; **1295**.**Cyanonitrosoacetic acid propyl ester.** $C_6H_8O_3N_2$. $k_A \times 10^5$ at $25^\circ = 2.3$; m. p. $106^\circ-107^\circ$. $\mu(64) = 14.2$, $(1024) = 53$, $(\infty) = 377.5$.Na.A at 25° , $\mu(128) = 76.0$, $(1024) = 79.5$; **1295**.**Cyanooximinoacetic acid** see **Cyanonitrosoacetic acid**.**p-Cyano phenol.** (p-Hydroxy-benzonitrile). $C_7H_5ON = CN.C_6H_4.OH$. $k_A \times 10^3$ at 0° is less than 3 aq.; **733**. At $25^\circ = 1.3$ (catal.); **1150, 733**; $= 6$ aq.; **733**. At $35^\circ = 8$ aq.; **733**.At 25° , $\Lambda(32) = 0.5$, $(256) = 1.3$, $(\infty) = 356$; **733**.Na.A at 25° , $\Lambda(32) = 66.3$, $(1024) = 78.0$ aq.; **733**.**Cyanopropionylacetic acid methyl ester.** $C_7H_9O_3N = EtCO.CH(CN).CO_2Me$. $k_A \times 10^4$ at $25^\circ = 7.5$; diminishes on diln.; m. p. $39^\circ-40^\circ$. $\Lambda(256) = 122.2$, $(1024) = 190.5$, $(\infty) = 352$; **699**.Na.A at 25° , $\Lambda(32) = 67.0$, $(1024) = 78.9$; **700, 699**.**Cyanotoluene** see **Tolunitrile**.**Cyano-iso-valerylacetic acid methyl ester.** $C_9H_{13}O_3N = Me_2CH.CH_2.CO.CH(CN).CO_2Me$. $k_A \times 10^4$ at $25^\circ = 7$; **700**.**Cyanuric acid.** (*iso*-Cyanuric acid). $C_3H_3O_3N_3$. $k_A \times 10^7$ at $25^\circ = 1.8$; **742**; $= 3.8$; **70**.At 0° , $\mu(64) = 0.66$; **1428**. At 25° , $\mu(128) = 1.7$, $(1024) = 5.1$; **742**. $\mu(32)$ at $70^\circ = 2.6$; at $80^\circ = 2.8$; at $90^\circ = 3.9$; at $96.2^\circ = 4.2$; **1428**. At $30^\circ-63^\circ$; **742**.In NH_3 , qual.; **606**. In pyridine; **754**.Hg.A, e. m. f.; **963**. - 2 Na.A at 25° , $\mu(32) = 176.5$, $(512) = 249.2$.3 Na.A at 25° , $\mu(32) = 396$, $(512) = 485$; **742, 1428**.**Cyanuric acid N-dimethyl ester.** (Dimethyl-cyanuric acid). $C_5H_7O_3N_3$.At 25° , $\mu[(64)?] = 0.26$; m. p. 222° ; **1428**.**Cyclobutane-carboxylic acid** see **Tetramethylene-carboxylic acid**.

Cycloheptane-carboxylic acid. (Suberane carboxylic acid). $C_8H_{14}O_2$.

$k_A \times 10^5$ [at 25°] = 1.22.

$\Delta(240.6) = 18.5$, $(962.4) = 35.7$, $(\infty) = 352$; **2026**.

Cycloheptatriene-carboxylic acid see *iso*-Phenylacetic acid.

1-Cycloheptene-1-carboxylic acid. (Suberene carboxylic acid).

$C_8H_{12}O_2$.

$k_A \times 10^5$ at $25^\circ = 9.92$ aq.; **1533**; = 8.3; (m. p. of amide is 134° – 135°); **1976**.

$\Delta(256) = 16.9$, $(1024) = 33.2$, $(\infty) = 375$; **1976**.

2-Cycloheptene-1-carboxylic acid. $C_8H_{12}O_2$.

$k_A \times 10^5$ at $25^\circ = 2.7$ aq.; m. p. 18° – 20° .

$\Delta(63.9) = 15.3$, $(255.5) = 29.9$, $(\infty) = [375]$; **1533**.

Cyclohexane-acetic acid. (Hexahydro-phenyl acetic acid).

$C_8H_{14}O_2 = C_6H_{11}.CH_2.CO_2H$.

$k_A \times 10^5$ [at 25°] = 2.36.

$\Delta(186.6) = 28.4$, $(1173.1) = 60.1$, $(\infty) = 352$; **2026**.

Cyclohexane-carboxylic acid see Hexahydro-benzoic acid.

Cyclohexane-propionic acid. (β -Hexahydro-phenyl propionic acid).

$C_9H_{16}O_2 = C_6H_{11}.CH_2.CH_2.CO_2H$.

$k_A \times 10^5$ [at 25°] = 1.34.

$\Delta(185) = 17.1$, $(1480) = 46.2$, $(\infty) = 352$; **2026**.

Cyclohexene-acetic acid. Liquid isomer. $C_8H_{12}O_2$.

$k_A \times 10^5$ [at 25°] = 2.60; **2026**.

Cyclohexene-acetic acid. Solid isomer. $C_8H_{12}O_2$.

$k_A \times 10^5$ [at 25°] = 2.49; m. p. 38° .

$\Delta(52.2) = 12.6$, $(835.5) = 47.4$, $(\infty) = 352$; **2026**.

Cyclopentane-carboxylic acid see Pentamethylene-carboxylic acid.

Cyclopentane-dicarboxylic acid see Pentamethylene-dicarboxylic acid.

Cyclopropane-carboxylic acid see Trimethylene-carboxylic acid.

Cymene. $C_{10}H_{14} = Me.C_6H_4.CHMe_2$.

$\kappa \times 10^8$ at 25° is less than 2; b. p. 167° – 169° @ 740.2 mm.

In HBr, HCl and H_2S , no cond.; **147a**.

Cond. with other compounds; **1388**.

Cytisine. $C_{11}H_{14}ON_2$.

Cond.; m. p. 152° – 153° ; **303**.

D.

Dahl's salt see 1-Naphthylamine-4,7-disulphonic acid.

Datura stramonium. (Thorn-apple). [The references to this are incomplete.]

Cond. of dil. soln. of leaves; **146**. Of root and stalk; **1326**.

Dehydroacetic acid. $C_8H_8O_4$.

$k_A \times 10^5$ at $25^\circ = 5.3$; **1372**; = 1.0; **397**.

- $\mu(119.4)=8.9$, $(955.2)=24.3$, $(\infty)=351$; **1372**.
 Cond. not increased by boric acid; **1184**.
iso-Dehydroacetic acid. (Dimethyl-coumalic acid. Hydroxy-mesitene-dicarboxylic acid anhydride). $C_8H_6O_4$.
 $k_A \times 10^3$ at $25^\circ=5.3$; m. p. 155° ; **1186**, **1372**.
 $\mu(65.3)=155.6$, $(1044.8)=305.1$, $(\infty)=353$; **1372**.
 Cond. with boric acid; **1186**.
Dehydroacetylcarboxylic acid see **Carboxydehydroacetic acid**.
Dehydrodiacetyl-laevulinic acid. $C_9H_{10}O_4$.
 $k_A \times 10^3=6.8$; m. p. $151.5^\circ-152^\circ$.
 $\mu(265)=44.0$, $(1060)=84.2$, $(\infty)=352$; **1202**.
Desoxy-3-methylxanthine see **3-Methyl-2-oxy-1,6-dihydro-purine**.
Desoxytheophylline see **1,3-Dimethyl-2-oxy-1,6-dihydro-purine**.
Desoxyxanthine see **2-Oxy-1,6-dihydro-purine**.
Dextrose see **Glucose**.
Di- see also **Bi-**
Diaceto-acetic acid ethyl ester. $C_8H_{12}O_4=(MeCO)_2CH.CO_2Et$.
 At 25° , $\Delta(128)=4.22$ after standing one-quarter hour; **698**.
Diacetone alcohol. $C_6H_{12}O_3$.
 Cond. with bases; **979**.
Diacetyl-diketo-hexamethylene-dicarboxylic acid. $C_{12}H_{12}O_8$.
 $\mu(1000)=321.9$; dec. 246° ; **558**.
Diacetyl-succinic acid. $C_8H_{10}O_6$.
 In NH_3 , qual.; **606**.
Diacetyl-tartaric acid. $C_8H_{10}O_8=(MeCO_2)_2C_2H_2(CO_2H)_2$.
 $k_A \times 10^3$ at 25° is more than 3. The anhydride (m. p. $128^\circ-129^\circ$) dissolved in water gives at 25° , $\mu(32)=214$, $(1024)=517$, $(\infty)=354$. No constant can be calculated.; **1838**.
 Deakin, Rivett, Jour. Chem. Soc. 101, 127, (1912), find $k_A \times 10^3$ at $25^\circ=2.5$ in strong soln. Second $k_A \times 10^3$ approximates 1.1 (cond.).
Diacetyl-tartaric acid anhydride. $C_8H_8O_7$.
 See the acid.
Diallyl-malonic acid. $C_9H_{12}O_4=(CH_2:CH.CH_2)_2C(CO_2H)_2$.
 $k_A \times 10^3$ at $25^\circ=7.6$; diminishes on diln.; m. p. 133° .
 $\mu(32)=136.0$, $(1024)=313$, $(\infty)=353$; **1838**.
Dialuric acid. (5-Hydroxy-barbituric acid). $C_4H_4O_4N_2$.
 k_A at 25° is probably of the order of 10^{-4} .
 $\mu(128)=51.5$, $(1024)=67.7$; **1748**.
 In NH_3 , qual.; **606**.
Diamino-benzene see **Phenylene-diamine**.
3,5-Diamino-benzoic acid.
 $C_7H_5O_2N_2=(NH_2)_2C_6H_3.CO_2H$. [$CO_2H=1$; $NH_2=3, 5$.]

$k_A \times 10^6$ at $25^\circ = 5$; k on diln. diminishes, with minimum value near $v(288)$, then increases.

$\Delta(36) = 6.9$, $(288) = 12.5$, $(576) = 17.9$, $(\infty) = 354$; **175**.

Diamino-caproic acid see **Lysine**.

2,6-Diamino-phenol-4-sulphonic acid. $C_6H_5O_4N_2S$. $[OH = 1.]$

Cond. alone and with $NaOH$; **1508**, **1718**.

2,3-Diamino-propionic acid.

$C_3H_5O_3N_2 = CH_2(NH_2).CH(NH_2).CO_2H$.

Cond. alone, and with organic acids; **145a**.

Diamino-stilbene dicarboxylic acid. (Anilinoxylic acid).

$C_{16}H_{14}O_4N_2$ or $C_8H_7O_2N$.

α - and β - acids. Cond. with KOH ; **499**. [In **798** it is said that these acids in **499** should be interchanged.]

Diamino-triphenyl carbinol. $C_{19}H_{18}ON_2 = (NH_2C_6H_4)_2.CPh.OH$.

$k_B \times 10^4$ at $21^\circ = 4$ (colorim.); **1617**.

Di-iso-amyl amine. $C_{10}H_{23}N = (C_5H_{11})_2.NH$.

$k_B \times 10^4$ at $25^\circ = 9.6$ aq.; about 16% too high.

$\Delta(216) = 70.6$, $(432) = 87.6$, $(\infty) = 191$; **271**.

In NH_3 , qual.; **606**.

$B.HCl$ at 25° , $\Delta(32) = 80.2$, $(1024) = 91.6$; **270**.

Diamyl ether see **Amyl ether**.

Diamyl- β -naphthyl amine. $C_{20}H_{25}N$.

In SO_2 ; **1842**.

Dianisal see **Dimethoxy-dibenzal**.

Diaterebic acid anhydride see **Terebic acid**.

Diazo compounds.

At the present time the nomenclature of diazo compounds is not settled. Their structure also is still a matter of dispute. The most general usage is to speak of the compound as a diazo body, while its salt is a diazonium salt, e. g. diazo-benzene, benzenediazonium chloride. This is done regardless of the question as to whether there are always two isomers, one a neutral body (diazo) the other a salt-forming body (diazonium). In these tables there is, therefore, a lack of uniformity in the position of diazo compounds, increased by the fact that the cyanides, chlorides, etc. are regarded by some as separate compounds and by others as salts. A duplication of references has been used to cover such differences of opinion, since our present knowledge does not seem to justify any final conclusion.

p-Diazo anisole see **p-Anisole diazonium hydroxide**.

Diazo benzene see **Benzene diazonium hydroxide**.

Diazo benzene acid see **Phenylnitroamine**.

Diazo benzene cyanide. $C_7H_5N_3 = Ph.N_2.CN.$

At 0° , $\mu(64) = 25.0$, $(256) = 30.3$.

Cond. with HCN; **735**.

Diazo benzene p-sulphonic acid. (Diazo sulphanilic acid).

$C_6H_4O_3N_2S.$

At 0° , $\mu(64) = 1.5$; **635**.

Cond. with NaOH; **635**, **731**.

K.A; **774**. — *anti*-2Na.A at 0° , $\mu(32) = 80.2$, $(1024) = 97.4$. *syn*-

2Na.A at 0° , $\mu(32) = 81.6$, (1024) is about 113; **635**, **731**.

Diazo guanidine. (Carbamide imide azide). $CH_5ON_5.$

At 25° , $\mu(32) = 19.8$; changes in soln. to aminotetrazole.

B.HNO₃ at 25° , $\mu(32)$ is about 92, (1024) is about 1147; **779**.

***anti*-β-Diazo naphthalene.** $C_{10}H_8ON_2 = C_{10}H_7.N_2.OH.$

Na.A at 0° , $\mu(32) = 34.4$, $(1024) = 38.6$; **500**.

o-Diazo phenol. $C_6H_5O_2N_2 = OH.C_6H_4.N_2.OH.$

At 25° , $\mu(64) = 0.8$.

B.Cl at 25° , $\mu(32) = 289.6$, $(1024) = 384.5$; **755**.

p-Diazo phenol. $C_6H_5O_2N_2.$

At 25° , $\mu(32) = 1.3$, $(64) = 1.7$; m. p. 38° – 39° .

B.Cl at 25° , $\mu(32) = 125.9$, $(1024) = 254.2$; **755**.

Diazo sulphanilic acid see **Diazo benzene p-sulphonic acid**.

***anti*-Diazo urethane.** (Nitroso-urethane). $C_3H_5O_3N_2 = EtO_2C.N_2.OH.$

$k_A \times 10^4$ at $0^\circ = 1.6$; m. p. 51° – 52° . $\mu(64) = 2.2$, $(512) = 6.4$, $(\infty) = 221$.

K.A at 0° , $\mu(32) = 42.4$, $(1024) = 45.6$; **774**.

Dibenzal-acetone. (Dibenzylidene-acetone).

$C_{17}H_{14}O = (PhCH:CH)_2CO.$

Comparative strength (colorim.); m. p. 112.5° ; **74**, **1663**.

1,3-Dibenzal-cyclo-2-pentanone. $C_{19}H_{16}O.$

Comparative strength (colorim.); m. p. 189° ; **1663**.

Dibenzamide. (Benzoic acid imide). $C_{14}H_{11}O_2N.$

Hg salt, e. m. f.; **963**.

Di-benzenesulphonic hydrazide. $C_{12}H_{12}O_4N_2S_2 = (PhSO_2)_2N_2H_2.$

With NaOH at 25° , $\mu(32) = 62.4$, showing cond. of a salt, Na.A;

m. p. 245° ; **781**.

Dibenzoyl-acetone. $C_{17}H_{14}O_3.$

Very weak acid in aq.

In pyridine; **754**.

Dibenzoyl-tartaric acid. $C_{18}H_{14}O_8 = (PhCO_2)_2C_2H_2(CO_2H)_2.$

$k_A \times 10^3$ at 25° is over 4; m. p. 90° – 95° .

$\mu(300) = 241$, $(1200) = 337$, $(\infty) = 352$; **1838**.

Dibenzyl-malonic acid. $C_{17}H_{16}O_4 = (PhCH_2)_2C(CO_2H)_2.$

$k_A \times 10^2$ at $25^\circ = 4.1$; m. p. 171° ; **1838**.

Second $k_A \times 10^5 = 1.9$ (cond.); **1911**.

At 25°, $\mu(128) = 302$, $(1024) = 349$, $(\infty) = 350$; **1838**.

2,6-Dibenzyl-pimelic acid.



$k_A \times 10^5$ at 25° = 4.8; m. p. 120°; **1859**, **1412**.

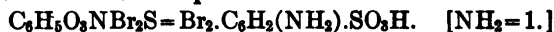
$\mu(2200) = 96.9$, $(4400) = 126.5$, $(\infty) = 350$; **1859**.

Dibromo-acetic acid. $C_2H_2O_2Br_2$.

In NH_3 , qual.; **606**.

Dibromo-acetyl- see Acetyldibromo-

4,5-Dibromo-aniline-2-sulphonic acid.



$k_A \times 10^2$ at 25° = 8.

$\Lambda(278) = 338$, $(1112) = 351$, $(\infty) = 353$; **1372**.

4,6-Dibromo-aniline-2-sulphonic acid. $C_6H_5O_3NBr_2S$.

$k_A \times 10$ at 25° = 1.8.

$\Lambda(109.8) = 338$, $(878.4) = 348$, $(\infty) = 354$; **1372**.

4,6-Dibromo-aniline-3-sulphonic acid. $C_6H_5O_3NBr_2S$.

$k_A \times 10^2$ at 25° = 2.9; diminishes on diln.

$\Lambda(71.9) = 262$, $(1150.4) = 340$, $(\infty) = 354$; **1372**.

2,6-Dibromo-aniline-4-sulphonic acid. $C_6H_5O_3NBr_2S$.

At 25°, $\Lambda(64) = 330.1$, $(1024) = 338.4$, $(\infty) = 354$; **492**.

Dibromo-barbituric acid. $C_4H_2O_3N_2Br_2$.

$k_A \times 10^6$ at 25° = 8.6; diminishes on diln. because of decomposition.

$\mu(32) = 5.9$, $(512) = 24.2$, $(\infty) = 358$; **1748**.

Dibromo-benzene. $C_6H_4Br_2$.

In NH_3 , qual.; **606**.

2,4-Dibromo-benzene diazonium syn-cyanide.



At 0°, $\mu(512) = 5.0$.

In Et alc.; **735**.

2,4-Dibromo-benzene diazonium hydroxide. (2,4-Dibromo-diazobenzene). $C_6H_4ON_2Br_2 = Br_2.C_6H_3.N_2.OH$.

$k_A \times 10^4$ at 0° = 1.36; **501**.

$\mu(256) = 23.7$, $(512) = 31.2$, $(\infty) = 137$; **501**.

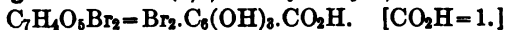
B.CN; **735**.

Dibromo-fluoroacetic acid. $C_2HO_2Br_2F = CBr_2F.CO_2H$.

At 25°, $\Lambda(32) = 338.1$, $(1024) = 359.8$, $(\infty) = 360.1$; b. p. 198°.

Na.A at 25°, $\Lambda(32) = 71.7$, $(1024) = 82.3$; **1694**.

Dibromo-gallic acid. (3,4,5-Trihydroxy-2,6-dibromo-benzoic acid).



$k_A \times 10^2$ at 25° = 1.21.

$\mu(32) = 162.3$, $(1024) = 337.7$, $(\infty) = 352$; **1371**.

- Dibromo-gallic acid ethyl ester.** $C_9H_9O_6Br_2 = Br_2.C_6(OH)_3.CO_2Et$.
 $k_A \times 10^6$ at 25° is at least 1; m. p. 137° .
 $\mu(80)=4.8$, $(630)=10.7$, $(\infty)=349$; - but some HBr is probably present, making the values too high; **404**.
- Dibromo-gallic acid methyl ester.** $C_8H_7O_6Br_2$.
 $k_A \times 10^6$ at $25^\circ = 1.1$; m. p. 169° .
 $\mu(32)=2.1$, $(256)=5.7$, $(\infty)=350$; **404**.
- Dibromo-hydroshikimic acid.** (Dibromo-shikimic acid. Hydroshikimic acid dibromide). $C_7H_{10}O_6Br_2$.
 $k_A \times 10^3$ at $12^\circ = 8$; m. p. about 188° with dec.
 $\mu(41.8)=132.5$, $(334.0)=239.1$, $(\infty)=294.6$; **541**.
- Dibromo-hydroxy-** see **Hydroxy-dibromo-**
- 2,3-Dibromo-1-indone.** (Dibromo-indenone. Dibromo-ketoidene). $C_9H_4OBr_2$.
 Comparative strength (colorim.); **1665**.
- 3,4-Dibromo-1-methylpyrrolglyoxylic acid.**
 $C_7H_5O_3NBr_2 = Me.N.C_4HBr_2(CO.CO_2H)$.
 At 25° , $\Lambda(294.8)=334.5$, $(1179.4)=355.4$, $(\infty)=357$; m. p. 160° ; **23**.
- β -Dibromo-methylsulphonepropionic acid.**
 $C_4H_6O_4Br_2S = CHBr_2.SO_2.CH_2.CH_2.CO_2H$.
 $k_A \times 10^4$ [at 25°] = 2.1; diminishes on diln.
 $\mu(32)=27.8$, $(512)=96$, $(\infty)=352$.
 $Na.A$ [at 25°], $\mu(32)=63.0$, $(256)=71.2$; **1134**.
- $\alpha\alpha$ -Dibromo-propionic acid.** $C_3H_4O_2Br_2 = CH_3.CBr_2.CO_2H$.
 $k_A \times 10^2$ at $25^\circ = 3.3$; diminishes on diln.; m. p. 61° .
 $\Lambda(32)=223$, $(1024)=345$, $(\infty)=357$; **1840**.
- $\alpha\beta$ -Dibromo-propionic acid.** $C_3H_4O_2Br_2 = CH_2Br.CHBr.CO_2H$.
 $k_A \times 10^3$ at $25^\circ = 6.7$; diminishes on diln.; m. p. 64° .
 $\Lambda(32)=131$, $(1024)=332$, $(\infty)=357$; **1840**.
- Dibromo-shikimic** see **Dibromo-hydroshikimic**.
- sym.*-Dibromo-succinic acid.** $C_4H_4O_4Br_2 = CO_2H.CHBr.CHBr.CO_2H$.
 $k_A \times 10^2$ at 25° is over 5; m. p. is over 200° ; **1838**, **1638**.
 Second $k_A \times 10^2 = 1.54$ (part.); **370**.
 At 25° , $\mu(32)=246$, $(1024)=571$; **1838**, **1638**.
 In NH_3 , qual.; **606**.
 $Na.A$; **370**. - $2Na.A$ at 25° , $\Lambda(32)=79.7$, $(1024)=96.7$; **270**, **370**.
- iso*-Dibromo-succinic acid.** $C_4H_4O_4Br_2$.
 At 25° , $\mu(65.2)=283$, $(1043)=463$; m. p. 161° ; **1638**.
- 3,5-Dibromo-2-toluidine-4-sulphonic acid.**
 $C_7H_7O_3NBr_2S = NH_2.C_6HBr_2(Me).SO_3H$. [Me=1; $NH_2=2$; $SO_3H=4$.]
 $k_A \times 10^2$ at $25^\circ = 3.8$; diminishes on diln.
 $\Lambda(64)=269.3$, $(512)=304.8$, $(\infty)=354$; **492**.

Di-iso-butyl amine. $C_8H_{19}N=(C_4H_9)_2NH$.

$k_B \times 10^4$ at $25^\circ = 5$ aq.; diminishes on diln.; about 16% too high.

$\Lambda(64) = 31.7$, $(256) = 55.8$, $(\infty) = 194$; **271**.

In H_2S , good cond.; **1897**.

B.HCl at 25° , $\Lambda(32) = 82.6$, $(1024) = 94.4$; **270**.

Di-iso-butyl-dithio carbamic acid. (Di-iso-butyl-thiosulphocarbamic acid). $C_8H_{19}NS_2=(C_4H_9)_2N.CS.SH$.

Cu.2A in benzene, little cond.; **431**.

Di-iso-butyl-pimelic acid. $C_{15}H_{28}O_4$.

Too insol. to get k accurately; m. p. $82^\circ-84^\circ$; **1412**.

cis-sym.-Di-iso-butyl-succinic acid.

$C_{12}H_{22}O_4=CO_2H.CH(C_4H_9).(C_4H_9)CH.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 5.6$; m. p. $97^\circ-98^\circ$.

$\mu(668.5) = 157.0$, $(1337.0) = 198.0$, $(\infty) = [351]$; **236**.

trans-sym.-Di-iso-butyl-succinic acid. $C_{12}H_{22}O_4$.

$k_A \times 10^4$ at $25^\circ = 2.25$; m. p. $193^\circ-195^\circ$.

$\mu(1060) = 134.5$, $(2120) = 172.2$, $(\infty) = [351]$; **236**.

Di-iso-butyl-thiosulphocarbamic acid see **Di-iso-butyl-dithio-carbamic acid**.

Dicarboxyl-glutaconic acid tetraethyl ester.

$C_{15}H_{22}O_8=(CO_2Et)_2CH.CH:C(CO_2Et)_2$.

Fe.3A, in Et alc.; **756**. - Na.A in SO_2 , no cond.; **1842**.

β γ -Dicarboxylic- γ -valerolactone. (β γ -Dicarboxylic- γ -valerolactonic anhydride). $C_7H_8O_6=C_6H_6O_4(CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 6.6$; diminishes on diln.; m. p. 168° with dec.

$\mu(32) = 129$, $(1024) = 308$, $(\infty) = 352$; **1839**.

Dichloro-acetic acid. $C_2H_3O_2Cl_2=CHCl_2.CO_2H$.

$k_A \times 10^2$ at 0° is about 7; **515**, **2004**. At $18^\circ = 5.15$; **460**. At $21.5^\circ = 6.3$ for $v(20)$; **1416**. At $25^\circ = 5.14$; **1370**; $= 5.7$ aq.; **515**; (neutral.); **295**; (precipitation of casein); **693**; (dissociation); **1972**, **1973**.

Cond. at 0° ; **2004**. At 12.5° ; **709**. At 17° ; **1011**. At 18° and 52° ; **43**. At 25° , $\Lambda(32) = 253.1$, $(1024) = 360.1$, $(\infty) = 361$; **1370**; **294**, **877**.

In H_2SO_4 ; **157**, **157a**, **750**. In NH_3 , qual.; **606**. In Et alc.; **654**, **667**, **1579**, **1970**, **1971**. In Me alc.; **1579**.

Cond. with KOH; **294**. Under pressure of 1-500 atmospheres; **220**.

K.A; **294**. - Na.A at 25° , $\Lambda(32) = 71.9$, $(1024) = 81.8$; **1368a**. At 18° and 52° ; **43**. - $UO_2.2A$; **449**.

Dichloro-acetic acid ethyl ester. $C_4H_5O_2Cl_2$.

Effect of temperature on cond.; **106**.

Dichloro-aniline-3-sulphonic acid.

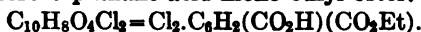
$C_6H_5O_3NCl_2S=Cl_2.C_6H_2(NH_2).SO_3H$. $[NH_2 = 1.]$

$k_A \times 10^3$ at $25^\circ = 3.4$; increases on diln.; (m. p. of anhydride = 187.5° – 189.5°); **1909**.

Second $k_A \times 10^4 = 2.8$; **1911**.

At 25° , $\mu(32.0) = 240.1$, $(1031) = 444.7$, $(\infty) = 377$; **1909**.

3,6-Dichloro-o-phthalic acid mono ethyl ester.



$k_A \times 10^3$ at 25° is about 1.5.

$\mu(514.5) = 335.6$, $(1030) = 354.3$, $(\infty) = 374$; **1909**.

sym.-Dichloro-*iso*-propyl alcohol see Dichloro-hydrin.

3,6-Dichloro-quinonedimalonic acid tetra ethyl ester. $C_{20}H_{22}O_{10}Cl_2$.

Satd. soln. has minimum cond.; **1188**.

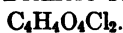
fum.-**2,3-Dichloro-succinic acid.**



$k_A \times 10^3 = 4$; increases on diln.; m. p. 215° .

$\mu(32) = 237.2$, $(64) = 291.1$; $(\infty) = [351]$; **1254**.

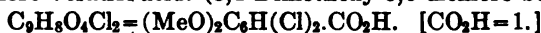
mal.-**2,3-Dichloro-succinic acid.** (*allo*-2,3-Dichloro-succinic acid).



$k_A \times 10^3 = 7$; increases on diln.; m. p. 175° .

$\mu(32) = 252.3$, $(64) = 308.5$, $(\infty) = [351]$; **1254**.

5,6-Dichloro-veratric acid. (3,4-Dimethoxy-5,6-dichloro-benzoic acid).



$k_A \times 10^3$ at $25^\circ = 1$; diminishes on diln.; m. p. 182° – 183° .

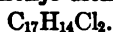
$\mu(1354) = 237$, $(2708) = 258$, $(\infty) = 352$; **404**.

Dicinnamenyl-acetone see Dicinnamenyl-vinyl-ketone.

Dicinnamenyl-cyclopentanone. $C_{22}H_{20}O$.

Comparative strength (colorim.); m. p. 89° ; **1663**.

Dicinnamenyl-dichloro-methane. (Distyryl-dichloro-methane).

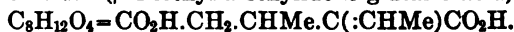


In SO_2 ; m. p. 77° ; **1676**.

Dicinnamenyl-vinyl-ketone. (Dieinnamenyl-acetone). $C_{21}H_{18}O$.

Comparative strength (colorim.); m. p. 142° ; **1663**.

Dicrotonic acid. (β -Methyl- α -ethylidene-glutaric acid).



$k_A \times 10^5 = 2.81$; m. p. 129° .

Na salt, cond. $(1024-32) = 11.9$; **1396**.

Dicuminal-acetone. $C_{22}H_{26}O$.

Comparative strength (colorim.); **1663**.

Dicuminal-cyclopentanone. $C_{25}H_{28}O$.

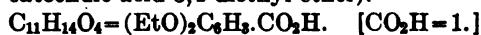
Comparative strength (colorim.); **1663**.

Dicyano-diamide. $C_2H_4N_4 = NH:C(NH_2).NH(CN)$.

Very weak acid. H ion concentration of 2% soln. = 10^{-7} . 0.3% soln., $\kappa \times 10^6 = 2.4$; **332**.

Dicyanogen see Cyanogen.

3,4-Diethoxy-benzoic acid. (Diethyl-protocatechuic acid. Proto-catechuic acid 3,4-diethyl ether).



$k_A \times 10^5$ at $25^\circ = 3.38$.

$\Lambda(1024) = 59.3$, $(\infty) = 350$; **1371**.

Diethyl-acetic acid. $\text{C}_6\text{H}_{12}\text{O}_2 = \text{CHEt}_2.\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $25^\circ = 2.03$; b. p. 190° ; **180, 1840**; $= 1.89$; **601**.

$\Lambda(76) = 13.5$, $(1216) = 50.5$, $(\infty) = 352$; **1840**.

Na.A at 25° , $\Lambda(32) = 63.7$, $(1024) = 73.4$; **601**.

Diethyl-amine. $\text{C}_4\text{H}_{11}\text{N} = \text{Et}_2\text{NH}$.

$k_B \times 10^3$ at $25^\circ = 1.26$ aq.; about 16% too high.

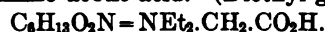
$\Lambda(32) = 37.1$, $(256) = 86.6$, $(\infty) = 203$; **271**.

In NH_3 , qual.; **606**.

Cond. with ethyl sulphamide; **1576**.

B.HCl at 25° , $\Lambda(32) = 92.0$, $(1024) = 103.7$; **270**. In HBr, good cond.; **1845**. In SO_2 ; **1855**. In NH_3 ; **610**. In Et alc.; **1884**.

Diethylamino-acetic acid. (Diethyl-glycine).



Cu.2A at 25° , $\Lambda(32) = 0.15$, $(64) = 0.28$; **1087**.

Diethyl-amino-azobenzene. $\text{C}_{16}\text{H}_{19}\text{N}_3$.

Cond. in HCl of compound not wholly pure; **1984**.

2,5-Diethyl-1-amino-1,3,4-triazole. (Diethyl-isodihydro-tetrazine).



$k_B \times 10^{10}$ [at 25°] $= 1.68$ (solub.); m. p. 167° ; **428**.

Diethyl-aniline. $\text{C}_{10}\text{H}_{15}\text{N} = \text{C}_6\text{H}_5.\text{NEt}_2$.

$k_B \times 10^7$ at 19° is at least 1 (colorim.); **1777**.

In HBr, good cond.; in H_2S , poor cond.; **1897**. In NH_3 , qual.; **606**.

B.HCl at 25° , $\Lambda(64) = 87.9$, $(256) = 93.8$; **270**.

5,5-Diethyl-barbituric acid. (Veronal.) $\text{C}_8\text{H}_{12}\text{O}_3\text{N}_2$.

$k_A \times 10^8$ at $25^\circ = 3.7$; m. p. 187° .

$\mu(64) = 0.6$; **1996**.

In pyridine, almost no cond.; **754**.

Diethyl-benzyl amine. $\text{C}_{11}\text{H}_{17}\text{N} = \text{PhCH}_2.\text{NEt}_2$.

$k_B \times 10^5$ at $25^\circ = 3.6$.

$\mu(137.7) = 13.1$, $(550.8) = 24.7$, $(\infty) = 192$; **664**.

Diethyl-m-chloroaniline. $\text{C}_{10}\text{H}_{14}\text{NCl} = \text{Cl.C}_6\text{H}_4.\text{NEt}_2$.

$k_B \times 10^{10}$ at 25° is less than 2.4 (colorim. and solub.); **660, 957**.

Diethyl-iso-dihydro-tetrazine see **Diethyl-amino-triazole**.

Diethylene diamine. (Piperazine). $\text{C}_4\text{H}_{10}\text{N}_2 = \text{NH}(\text{C}_2\text{H}_4)_2\text{NH}$.

$k_B \times 10^5$ at $25^\circ = 6.7$ aq.; about 16% too high; diminishes on diln.

$\Lambda(32) = 9.1$, $(256) = 23.9$, $(\infty) = 202$; **271**.

B.2HCl at 25° , $\Lambda(32) = 116.0$, $(1024) = 145.2$; **270**.

β -Diethyl-ethylenelactic acid. $C_7H_{14}O_3 = Et_2C(OH).CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 3$; m. p. $38^\circ-39^\circ$.

$\mu(35.1) = 11.1$, $(1123.8) = 59.7$, $(\infty) = 350$; **1704**.

α -sym.-Diethyl-glutaric acid. $C_9H_{16}O_4 = CH_2(CH_2Et.CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 5.3$; m. p. $118^\circ-119^\circ$; **61, 1418**.

$\mu(128) = 27.7$, $(1024) = 74.8$, $(\infty) = 351$; **61**.

β -sym.-Diethyl-glutaric acid. $C_9H_{16}O_4$.

$k_A \times 10^5$ at $25^\circ = 5.9$; m. p. $76^\circ-78^\circ$; **61, 175, 1418**.

$\mu(128) = 29.3$, $(1024) = 77.5$, $(\infty) = 351$; **61**.

Diethyl-malonic acid. $C_7H_{12}O_4 = Et_2C(CO_2H)_2$.

$k_A \times 10^3$ at $18^\circ = 8.5$ (colorim.); **1563**. At $25^\circ = 7.4$; m. p. $120^\circ-121^\circ$; **1838**.

Second $k_A \times 10^7 = 1.8$ (inversion); **1638**.

At 25° , $\mu(32) = 135.7$, $(1024) = 312$, $(\infty) = 354$; **1838**.

Diethyl-malonic acid mono ethylester. $C_9H_{16}O_4 = Et_2C(CO_2H)(CO_2Et)$.

$k_A \times 10^4$ at $25^\circ = 2.31$; diminishes on diln.

$\mu(36.5) = 30.9$, $(1168.0) = 140.0$, $(\infty) = 351$; **1859**.

Diethyl-pentanetetracarboxylic acid.

$C_{13}H_{20}O_8 = (CO_2H)_2C(Et).(CH_2)_3.CEt(CO_2H)_2$.

$k_A \times 10^2$ at $25^\circ = 2.1$.

$\mu(11.3) = 120.4$, $(1446.0) = 511.0$, $(\infty) = 350$; **1859**.

Diethyl phosphoric acid see **Phosphoric acid diethyl ester**.

2,6-Diethyl-pimelic acid. $C_{11}H_{20}O_4 = CH_2(CH_2.CHEt.CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 3.45$; m. p. $96^\circ-97^\circ$; **1412, 1859**.

$\mu(155.0) = 24.6$, $(310.0) = 34.5$, $(\infty) = 350$; **1859**.

Diethyl-protocatechuic acid see **3,4-Diethoxy-benzoic acid**.

Diethyl selenium thietine. $C_6H_{14}O_3Se = OH.SeEt_2.CH_2.CO_2H$.

$k_B \times 10^{10} = 3$ (hydrol.); **350 and 1150**.

$\mu(32) = 7.2$, $(256) = 11.9$.

B.Br, $\mu(32) = 96$, $(1024) = 105$; $M(32) = 106.5$; **350**.

fum.-sym.-Diethyl-succinic acid. (para- acid).

$C_8H_{14}O_4 = CO_2H.CHEt.CHEt.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.35$; m. p. 192° ; **280, 196, 200, 1371, 1838, 2018**.

$\mu(65.9) = 41.2$, $(1054) = 136.6$, $(\infty) = 351$; **280**.

mal.-sym.-Diethyl-succinic acid. (anti- acid. Diethylene-succinic acid). $C_8H_{14}O_4$.

$k_A \times 10^4$ at $25^\circ = 3.47$; m. p. 130° ; **280, 196, 200, 1371, 1838, 2018**.

$\mu(93.7) = 58.0$, $(1499) = 177.2$, $(\infty) = 351$; **280**.

Diethyl-succinic acid. (Bischoff's).

$k_A \times 10^4$ at $25^\circ = 3.8$; diminishes on diln.; impure?; m. p. 137.5° ; **198, 1838**.

$\mu(32)=36.9$, $(1024)=160$, $(\infty)=351$; **1838**.

2Na.A at 25° , $\mu(32)=73.1$, $(1024)=90.6$; **1838**.

Diethyl sulphide. (Ethyl sulphide). $C_4H_{10}S=Et_2S$.

Cond. with EtI in Me, Et and benzyl alc.; **334**. With HgI_2 in acetone; **1379**.

Diethyl sulphite see Sulphurous acid diethyl ester.

asym.-**Diethyl sulphite** see Ethyl sulphonic acid ethyl ester.

Diethyl thetine. $C_6H_{14}O_3S=OH.SEt_2.CH_2.CO_2H$.

$k_B \times 10^{13}=5$ (hydrol.); **350** and **1150**.

$\mu(32)=2.5$, $(256)=3.1$.

B.Br. - B.Cl, $\mu(32)=93$, $(1024)=103$; $M(32)=268.4$; **350**.

Diethyl-m-toluidine. $C_{11}H_{17}N=Me.C_6H_4.NEt_2$.

$k_B \times 10^8$ at 25° is over 2.3 (solub.); **660**, **957**.

Diethyl-triazole. $C_6H_{11}N_3$.

$k_B \times 10^{11}=5$ (sapon.); m. p. 66° ; **428**.

Diethyl-urea. $C_6H_{12}ON_2$.

B.HCl at 25° , $\Lambda(50)=362.3$; **1864**.

Diferri-pentaacetyl hydroxide. $C_{10}H_{16}O_{11}Fe_2=Fe_2(C_2H_3O_2)_5.OH$.

At 25° , $\Lambda(32)=9.3$, $(1024)=82.2$; **1528**.

Difluoro-acetic acid. $C_2H_2O_2F_2=CHF_2.CO_2H$.

$k_A \times 10^2$ at $25^\circ=5.7$; b. p. 134.2° (cor.) @ 766 mm.

$\Lambda(32)=283.7$, $(1024)=394.5$, $(\infty)=395$.

Na.A at 25° , $\Lambda(32)=85.7$, $(64)=89$, $(\infty)=99$; **1696**.

Difluoro-ethyl alcohol. $C_2H_4OF_2=C_2H_3F_2.OH$.

0.5 normal soln. [at 25°], $\Lambda=0.02$; b. p. $95.5^\circ-96^\circ$; **1695**.

Difluoro-ethyl amine. $C_2H_5NF_2=CHF_2.CH_2.NH_2$.

$k_B \times 10^7$ [at 25°]=3.3; b. p. $67.5^\circ-67.8^\circ$ (cor.) @ 757 mm.

$\Lambda(32)=0.8$, $(128)=1.6$, $(\infty)=245.2$.

B.HCl [at 25°], $\Lambda(32.3)=105.5$, $(1034.2)=123.5$; **1697**.

Difluoro-ethylnitroamine. $C_2H_4O_2N_2F_2=CHF_2.CH_2.NH(NO_2)$.

$k_A \times 10^5$ [at 25°]=1.36; b. p. $111^\circ-112^\circ$ @ 12 mm.

$\Lambda(33.2)=8.0$, $(1061.1)=44.3$, $(\infty)=382.6$.

Na.A [at 25°], $\Lambda(33.2)=77.2$, $(1061.1)=88.6$; **1697**.

Difural see Difurfural.

Difurfural-acetone. $C_{13}H_{10}O_3$.

Comparative strength (colorim.); **1663**.

1,3-Difurfural-cyclo-2-pentanone. $C_{15}H_{12}O_3$.

Comparative strength (colorim.); m. p. 163° ; **1663**.

α -Digallic acid. $C_{14}H_{10}O_9=(OH)_2.C_6H_2.CO_2.C_6H_2(OH)_2.CO_2H$.

$k_A \times 10^6$ at $25^\circ=1.2$; sinters 120° , dec. 150° .

$\mu(32)=6.8$, $(128)=13$, $(\infty)=350$; **1825**.

Digitaline. [A mixture?]

In NH_3 , qual.; **606**.

Digitalis. (Foxglove). [The references to this are incomplete.]

Cond. of soln. of powdered drug; **146.**

Diglycolamic acid. $C_4H_7O_4N = NH(CH_2.CO_2H)_2$.

$k_A \times 10^3 = 2$; increases on diln.

$\mu(32) = 59.5$, $(1024) = 265$, $(\infty) = 354$; **1673.** Qual.; **1669.**

Hg.A, e. m. f.; **963.**

Diglycollic acid. $C_4H_6O_5 = O(CH_2.CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 1.1$; **1370.**

Second $k_A \times 10^3 = 3.7$ (cond.); **1911.**

At 25° , $\mu(64) = 82.0$, $(1024) = 239.6$, $(\infty) = 356$; **1370.**

$2Na.A$ at 25° , $\Lambda(32) = 81.0$, $(1024) = 99.0$; **270.**

Dihydro- see also **Hydro-**

Dihydro-camphoric acid. $C_{10}H_{18}O_4 = C_8H_{16}(CO_2H)_2$.

$k_A \times 10^3 = 4.15$; m. p. 106° ; **413.**

Dihydro-collidinedicarboxylic acid diethyl ester. $C_{14}H_{21}O_4N$.

In NH_3 , qual.; **606.**

$\Delta\alpha\beta$ -Dihydro-muconic acid. (*stabile* acid).

$C_6H_8O_4 = CO_2H.(CH_2)_2.CH:CH.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.20$; diminishes on diln.; m. p. 169° – 170° ; **1638, 1543.**

Second $k_A \times 10^6 = 7.9$ (inversion); **1638.**

At 25° , $\mu(66.7) = 40.4$, $(1077) = 103.0$, $(\infty) = 354$; **1638.**

$\Delta\beta\gamma$ -Dihydro-muconic acid. (*labile* acid).

$C_6H_8O_4 = CO_2H.CH_2.CH:CH.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.02$; m. p. 195° ; **1638, 1543.**

Second $k_A \times 10^6 = 5.3$ (inversion); **1638.**

At 25° , $\mu(64) = 27.4$, $(1024) = 96.0$, $(\infty) = 354$; **1638.**

Δ^2 -Dihydro- α -naphthoic acid. (α or *labile* acid).

$C_{11}H_{10}O_2 = C_{10}H_8.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.14$; m. p. 91° ; **175, 71.**

$\Lambda(80.2) = 31.9$, $(1282.7) = 112.1$, $(\infty) = 350$; **175.**

Δ^1 -Dihydro- α -naphthoic acid. (β or *stabile* acid). $C_{11}H_{10}O_2$.

$k_A \times 10^5$ at $25^\circ = 8.0$; m. p. 125° ; **175, 71.**

$\Lambda(335.1) = 53$, $(1340.4) = 99.1$, $(\infty) = 350$; **175.**

Δ^3 -Dihydro- β -naphthoic acid. (Δ^2 or *labile* acid). $C_{11}H_{10}O_2$.

$k_A \times 10^5$ at $25^\circ = 5.15$; increases on diln.; m. p. 104° ; **70, 71.**

$\Lambda(226.7) = 35.8$, $(906.8) = 69.1$, $(\infty) = 352$; **70.**

Δ^2 -Dihydro- β -naphthoic acid. (Δ^1 or *stabile* acid). $C_{11}H_{10}O_2$.

$k_A \times 10^5$ at $25^\circ = 2.9$; increases on diln.; m. p. 161° ; **70, 71.**

$\Lambda(1795) = 72.2$, $(3590) = 97.3$, $(\infty) = 352$; **70.**

$\Delta^{1,2}$ -Dihydro-*o*-phthalic acid. $C_8H_6O_4 = C_6H_4(CO_2H)_2$. [$CO_2H = 1, 2$.]

$k_A \times 10^4$ at $25^\circ = 7.98$; diminishes on diln.

$\mu(32) = 55.6$, $(1024) = 199.3$, $(\infty) = 377$; (the anhydride has m. p. 58°); **1.**

$\Delta^{2,4}$ -Dihydro-o-phthalic acid. $C_8H_8O_4$. $k_A \times 10^4$ [at 25°]=1.55; m. p. 179° - 180° ; **72**. **$\Delta^{2,5}$ -Dihydro-o-phthalic acid.** $C_8H_8O_4$. $k_A \times 10^4$ at 25° =5.5; diminishes on diln. $\mu(32)=46.9$, $(1024)=187.6$; $(\infty)=377$; (the anhydride has m. p. 73° - 74°); **3**. **$\Delta^{2,6}$ -Dihydro-o-phthalic acid.** $C_8H_8O_4$. $k_A \times 10^4$ at 25° =1.7; m. p. 215° ; **72**, **1638**.Second $k_A \times 10^6$ =1.2 (inversion); **1638**.At 25° , $\mu(64)=33.4$, $(1024)=116.9$, $(\infty)=353$; **1638**.***trans*- $\Delta^{3,5}$ -Dihydro-o-phthalic acid.** $C_8H_8O_4$. $k_A \times 10^4$ [at 25°]=2.46; m. p. 210° ; **72**.**Dihydro-resorcinol (Hydroresorcinol).** $C_6H_8O_2=C_6H_7O(OH)$. $k_A \times 10^6$ at 25° =5.5 aq. $\Lambda(32)=4.8$, $(1024)=28.4$, $(\infty)=377$.Na.A at 25° , $\Lambda(32)=68.7$, $(1024)=81.4$; **1588**.**Dihydro-tetrazine** see **Amino-triazole**.**Dihydroxy-** see also **Dioxy-****1,2-Dihydroxy-anthraquinone** see **Alizarin**.**4,4'-Dihydroxy-azobenzene** see **p-Azophenol**.**2,4-Dihydroxy-benzaldehyde.** (Resorcyal aldehyde). $C_7H_6O_3=(OH)_2.C_6H_3.CHO$. [$CHO=1$; $OH=2$, 4.] $k_A \times 10^6$ at 25° =3.57; m. p. 134° - 135° . $\mu(128)=7.5$, $(1024)=21.0$, $(\infty)=355$; **643**.**2,5-Dihydroxy-benzaldehyde.** (Gentisic aldehyde). $C_7H_6O_3$. $k_A \times 10^6$ at 25° =4.2; m. p. 99° . $\mu(128)=25.4$, $(1024)=66.4$, $(\infty)=355$; **643**.**3,4-Dihydroxy-benzaldehyde.** (Protocatechuic aldehyde). $C_7H_6O_3$. $k_A \times 10^6$ at 25° =3.1; **643**;=0.0028; **1397c**. $\mu(256)=32.4$, $(1024)=58.2$, $(\infty)=355$; **643**. $\mu(32)=0.4$, $(128)=0.8$, $(\infty)=379$; **1397c**. - **1718**. [While the values of k and μ in **643** are probably too high, the values in **1397c** seem to be entirely too low.]Cond. with NaOH in aq. and Et alc.; **1718**.**o-Dihydroxy-benzene** see **Pyrocatechol**.**m-Dihydroxy-benzene** see **Resorcinol**.**p-Dihydroxy-benzene** see **Hydroquinone**.**2,3-Dihydroxy-benzoic acid.** (3-Hydroxy-salicylic acid. m-Oxy-salicylic acid. Pyrocatechin-o-carboxylic acid). $C_7H_6O_4=(OH)_2.C_6H_3.CO_2H$. [$CO_2H=1$; $OH=2$, 3.] $k_A \times 10^6$ at 25° =1.14; **1368**, **1371**. $\mu(64)=84.1$, $(1024)=230.0$, $(\infty)=356$; **1371**.**2,4-Dihydroxy-benzoic acid.** (β -Resorcylic acid. α -acid of Ostwald). $C_7H_6O_4$.

$k_A \times 10^4$ at $25^\circ = 5$; m. p. 188° to 206° ; **1186, 1371, 1684**; $= 8.8$ (neutral.); **1718**.

$\mu(64) = 58.6$, $(1024) = 181.7$, $(\infty) = 356$; **1371**.

In Et alc.; **1185, 1718, 1970**.

Cond. with boric acid; **1185, 1186**. With NaOH; **1508, 1718**.

2,5-Dihydroxy-benzoic acid. (Gentisic acid. 5-Hydroxy-salicylic acid). $C_7H_6O_4$.

$k_A \times 10^3$ at $18^\circ = 1.2$ (colorim.); **1563**. At $25^\circ = 1.08$; increases on diln.; **1371**.

At 25° , $\mu(64) = 80.5$, $(1024) = 227.1$, $(\infty) = 356$; **1371**.

2,6-Dihydroxy-benzoic acid. (β -Resorcylic acid of Ostwald). $C_7H_6O_4$. $k_A \times 10^2$ at $25^\circ = 5$.

$\mu(64) = 285$, $(1024) = 347$, $(\infty) = 356$; **1371, 1508, 1718**.

Cond. with NaOH; m. p. 150° dec.; **1508, 1718**.

3,4-Dihydroxy-benzoic acid. (Protocatechuic acid). $C_7H_6O_4$.

$k_A \times 10^6$ at $18^\circ = 4.1$ (colorim.); **1563**. At $25^\circ = 3.3$; increases on diln.; m. p. 199° ; **1186, 1371**.

At 25° , $\mu(32) = 10.7$, $(64) = 15.1$, $(1024) = 59.3$, $(\infty) = 356$; **1371, 1718**.

In Et alc.; **1185**.

Cond. with boric acid; **1185**; qual.; **1184**. With NaOH; **1508, 1718**.

3,5-Dihydroxy-benzoic acid. $C_7H_6O_4$.

$k_A \times 10^5$ at $25^\circ = 9.1$.

$\mu(32) = 18.7$, $(64) = 26.1$, $(1024) = 94.5$, $(\infty) = 356$; **1371**.

Di(hydroxybenzyl) hypophosphoric acid.

$C_{14}H_{18}O_4P = (Ph.CHOH)_2PO.OH$.

Relative cond.; (the aniline salt has m. p. 190° dec.); **1771**.

Dihydroxy-carbostyryl see **Trihydroxy-quinoline**.

2,4-Dihydroxy-cinnamic acid see **Umbellic acid**.

3,4-Dihydroxy-cinnamic acid see **Caffeic acid**.

Dihydroxy-dibromo-benzoquinone see **Bromoanilic acid**.

3,4-Dihydroxy-2,5-dichloro-benzoic acid. (Dichloro-protocatechuic acid).

$C_7H_4O_4Cl_2 = (OH)_2.C_6HCl_2.CO_2H$. [$CO_2H = 1$; $OH = 3, 4$; $Cl = 2, 5$.]

$k_A \times 10^3$ at 25° is about 1.2; increases on diln.

$\mu(32) = 46.5$, $(64) = 70.7$, $(1024) = 229.1$, $(\infty) = 355$; m. p. 220° ; **404**.

3,4-Dihydroxy-2,5-dichloro-benzoic acid methyl ester.

$C_8H_6O_4Cl_2$. [$CO_2Me = 1$.]

$k_A \times 10^6$ at $25^\circ = 4.4$; m. p. 105° .

$\mu(256) = 11.9$, $(1024) = 23.5$, $(\infty) = 352$; **404**.

3,4-Dihydroxy-5,6-dichloro-benzoic acid. $C_7H_4O_4Cl_2$. [$CO_2H=1.$]

$k_A \times 10^3$ at 25° is about 1.2; increases on diln.

$\mu(64)=70.6$, $(1024)=223.5$, $(\infty)=355$; m. p. 239° ; **404**.

3,4-Dihydroxy-5,6-dichloro-benzoic acid methyl ester.

$C_8H_6O_4Cl_2$. [$CO_2Me=1.$]

Too insol. in aq. to measure; m. p. $223^\circ-225^\circ$; **404**.

α -Dihydroxy-dihydro-campholenic acid.

$C_{10}H_{18}O_4=C_9H_{15}(OH)_2.CO_2H$.

$k_A \times 10^6$ at $18^\circ=2.5$; increases on diln.; m. p. $144^\circ-145^\circ$.

$\mu(59)=11.8$, $(1185)=50.4$, $(\infty)=317$; **1899**.

Dihydroxy-dimethyl- see **Dimethyl-dihydroxy-**

Dihydroxy-fumaric acid. (β -acid).

$C_4H_4O_6=CO_2H.C(OH):C(OH).CO_2H$.

$k_A \times 10^2$ at 25.2° is about 7.2 aq. Cond. increases rapidly on standing, therefore the values are not accurate.

$\mu(64)=306$, $(\infty)=356$; **1629**.

Dihydroxy-hydroshikimic acid. (inactive). $C_7H_{12}O_7$.

$k_A \times 10^4$ at $19^\circ=7.2$; m. p. 156° dec.

$\mu(20)=36.6$, $(320)=121.7$, $(\infty)=323.8$; **541**.

Dihydroxy-maleic acid. $C_4H_4O_6=CO_2H.C(OH):C(OH).CO_2H$.

$k_A \times 10^2$ at 25° is about 7.2 aq. Cond. increases rapidly on standing; but the values are more accurate than for dihydroxy-fumaric acid.

$\mu(64)=298.4$, $(128)=325$, $(\infty)=356$; **1629**.

1,7-Dihydroxy-naphthalene. $C_{10}H_8O_2$.

Cond. with NaOH; m. p. 178° ; **1017**.

Dihydroxy-picolinic acid see **Comenamic acid**.

Dihydroxy-quinonedicarboxylic acid diethyl ester. $C_{12}H_{12}O_6$.

In pyridine; **754**.

Dihydroxy-tartaric acid. $C_4H_6O_6=CO_2H.C(OH)_2.C(OH)_2.CO_2H$.

$k_A \times 10^2$ at 25° is about 1.24 aq.; diminishes on diln., because of changing to tartronic acid and CO_2 .

$\mu(32)=162$, $(1024)=322$, $(\infty)=354$; **1629**.

3,5-Dihydroxy-toluene see **Orcinol**.

Dihydroxy-triazolidine- see **Methyl-dihydroxy-triazole** etc.

Diketopiperazine see **Aminoacetic acid anhydride**.

2,5-Diketo-tetrahydro-thiazole. (Carbamine thioglycollic acid anhydride. Dioxy-thiazole. Mustard oil acetic acid).

$C_3H_5O_2NS$.

$k_A \times 10^7$ at $0^\circ=0.71$. At $18^\circ=1.5$. At $25^\circ=1.8$; **949**; $=2.4$; **1370**.

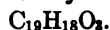
At 25° , $\mu(16)=0.7$, $(32)=1.0$, $(\infty)=360$; **1370**. - **949**.

In Et alc.; **782**.

$NH_4.A$; **949**.

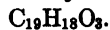
3,4-Dimethoxy-benzoic acid see **Veratric acid**.

2,2'-Dimethoxy-dibenzal acetone. (o,o'-Dianisal-acetone).



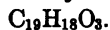
Comparative strength (colorim.); m. p. 125°; **74**.

3,3'-Dimethoxy-dibenzal acetone. (m,m'-Dianisal-acetone).



Comparative strength (colorim.); m. p. 52°-54°; **74**.

4,4'-Dimethoxy-dibenzal acetone. (p,p'-Dianisal-acetone).



Comparative strength (colorim.); m. p. 130°; **74**, **1663**.

1,3-Dimethoxy-dibenzal-cyclo-2-pentanone. (Dianisal-cyclopentanone). $\text{C}_{21}\text{H}_{20}\text{O}_3$.

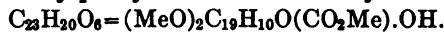
Comparative strength (colorim.); m. p. 212°; **1663**.

3,4-Dimethoxy-5,6-dichloro-benzoic acid see **5,6-Dichloro-veratric acid**.

Dimethoxy-norhemipinic acid see **Hemipinic acid**.

Dimethoxy-noropianic acid see **Opianic acid**.

3,6-Dimethoxy-phenylxanthonium carboxylic acid methyl ester.



At 0, $\Delta(200) = 82; = 68$ after 1 minute, $= 15.6$ after 20 minutes; **956a**, **1292a**.

B.Cl ($= \text{C}_{23}\text{H}_{18}\text{O}_5\text{Cl}$) at 18°, $\Delta(64) = 148.7$, $(1024) = 170.0$; **956a**.

3,4-Dimethoxy-o-phthalic acid see **Hemipinic acid**.

Dimethyl-acetamide see **Acetic acid amide**.

aa'-Dimethyl- β -acetoxy-glutaric acid. (Dimethyl-hydroxy-glutaric acid acetyl derivative).



$k_A \times 10^4$ at 25° = 2; m. p. 120°-121°; **1475**, **1704**.

$\mu(33.4) = 27.2$, $(1068.8) = 126.6$, $(\infty) = 348$; **1704**.

β -Dimethyl-acrylic acid. $\text{C}_5\text{H}_8\text{O}_2 = \text{Me}_2\text{C}:\text{CH}.\text{CO}_2\text{H}$.

$k_A \times 10^4$ [at 25°] = 2; m. p. 70°; **1411**.

α -sym.-Dimethyl-adipic acid. (*fum.*).



$k_A \times 10^5$ at 25° = 4.2; m. p. 140°-141°; **2016**, **2018**, **2021**.

Second $k_A \times 10^6 = 1.7$ (inversion); **1638**.

At 25°, $\mu(56.1) = 16.6$, $(448.6) = 44.9$, $(\infty) = 351$; **2018**.

β -sym.-Dimethyl-adipic acid. (*mal.*). $\text{C}_8\text{H}_{14}\text{O}_4$.

$k_A \times 10^5$ at 25° = 4.2; m. p. 74°-76°; **2016**, **2018**, **2021**.

Second $k_A \times 10^6 = 1.7$ (inversion); **1638**.

At 25°, $\mu(24.8) = 11.1$, $(396.8) = 42.7$, $(\infty) = 351$; **2018**.

Dimethyl-alloxan. $\text{C}_4\text{H}_8\text{O}_4\text{N}_2$.

At 25°, $\Delta(32) = 7.5$, $(1024) = 16.1$, $(\infty) = [356]$; **1748**.

Dimethyl-amine. $\text{C}_2\text{H}_7\text{N} = \text{Me}_2\text{NH}$.

$k_B \times 10^4$ at 0° = 3.71. At 5.5° = 4.18. At 10° = 5.01. At 20° = 5.10.
At 25° = 5.35; **776**; = 5 (neutral.); **299a**; = 7.4 aq.; about 16%

- too high; **271**. At $30^\circ=5.36$. At $35^\circ=5.45$. At $40^\circ=5.67$. At $45^\circ=5.67$. At $50^\circ=5.63$; **776**.
 At 25° , $\Lambda(32)=31.0$, $(256)=75.4$, $(\infty)=217$; **271**. - **299a**.
 Cond. with HCl; **299a**. With NaCl; **177**. Complex with succinimide; **1750**, **1755**.
 B.HCl at 25° , $\Lambda(32)=106.3$, $(1024)=117.5$; **270**. In SO_2 ; **1842**, **1855**. In NH_4OH ; **650**. In CHCl_3 ; **740**.
Dimethyl-aminoacetic acid. (Dimethyl-glycocoll).
 $\text{C}_4\text{H}_9\text{O}_2\text{N}=\text{NMe}_2.\text{CH}_2.\text{CO}_2\text{H}$.
 $k_A \times 10^{10}$ at $25^\circ=1.4$ (catal.); $=2000$ (cond.).
 $k_B \times 10^{12}$ at $25^\circ=1.06$ (catal.); m. p. $157^\circ\text{--}160^\circ$; **890**.
Dimethyl-aminoazobenzene. $\text{C}_{14}\text{H}_{15}\text{N}_3=\text{Ph.N}_2.\text{C}_6\text{H}_4.\text{NMe}_2$.
 $k_A \times 10^{11}$ at $18^\circ\text{--}19^\circ=1.45$ (colorim.); **1562**.
p-Dimethyl-aminoazobenzene-o-carboxylic acid. (Methyl Red).
 $\text{C}_{15}\text{H}_{15}\text{O}_2\text{N}_3=\text{Me}_2\text{N.C}_6\text{H}_4.\text{N}_2.\text{C}_6\text{H}_4.\text{CO}_2\text{H}$.
 $k_A \times 10^6$ at $18^\circ=1.05$ (colorim.).
 $k_B \times 10^{12}$ at $18^\circ=3$ (colorim.); **1729a**.
p-Dimethyl-aminoazobenzene sulphonic acid. (Sodium salt=Helianthine, Methyl Orange, Orange III or Tropaeolin).
 $\text{C}_{14}\text{H}_{15}\text{O}_2\text{N}_3\text{S}=\text{Me}_2\text{N.C}_6\text{H}_4.\text{N}_2.\text{C}_6\text{H}_4.\text{SO}_3\text{H}$.
 $k_A \times 10^4$ at $18^\circ\text{--}19^\circ=4.6$ (colorim.); **1562**. At 25° is about 0.3; **1984**. $=4.3$ (colorim.); **1729a**.
 $k_B \times 10^{14}$ at 25° , is less than 1 (colorim.); **1729a**.
 At 25° , $\Lambda(970)=52.0$, $(1940)=62.4$, $(\infty)=349$; **1984**.
 Cond. with HCl and with bases; **1984**.
 Na.A at 25° , $\Lambda(256)=68.5$, $(1024)=70.4$; **1984**, **1770**. With inorg. acids; **1770**, **1984**. With NaOH; **1984**. In MeNH_2 , fair cond.; **637**. - K.A; **1984**. [See **1705**, **1705a**, **1782**, concerning accuracy of colorimetric methods.]
o-Dimethyl-aminobenzoic acid. (Dimethyl-anthranilic acid).
 $\text{C}_9\text{H}_{11}\text{O}_2\text{N}=\text{Me}_2\text{N.C}_6\text{H}_4.\text{CO}_2\text{H}$.
 $k_A \times 10^9$ at $25^\circ=2.3$ (catal.).
 $k_B \times 10^{13}$ at $25^\circ=2.8$ (catal.); m. p. 70° .
 At 25° , $\Lambda(8)=0.06$.
 Na.A at 25° , $\Lambda(32)=67.4$, $(1024)=80.8$; **414**.
o-Dimethyl-aminobenzoic acid methyl ester.
 $\text{C}_{10}\text{H}_{13}\text{O}_2\text{N}=\text{Me}_2\text{N.C}_6\text{H}_4.\text{CO}_2\text{Me}$.
 $k_B \times 10^{11}$ at $25^\circ=6.1$ (catal.); (B.HCl has m. p. $145^\circ\text{--}147^\circ$); **414**.
m-Dimethyl-aminobenzoic acid. $\text{C}_9\text{H}_{11}\text{O}_2\text{N}=\text{Me}_2\text{N.C}_6\text{H}_4.\text{CO}_2\text{H}$.
 $k_A \times 10^6$ at $25^\circ=8$ (catal.). $=5.5$ (cond.).
 $k_B \times 10^{11}$ at $25^\circ=1.9$ (catal.).
 At 25° , $\Lambda(128)=8.6$, $(1024)=27.0$, $(\infty)=375$; **414**.
m-Dimethyl-aminobenzoic acid methyl ester. $\text{C}_{10}\text{H}_{13}\text{O}_2\text{N}$.
 $k_B \times 10^{11}$ at $25^\circ=7.3$ (catal.); (B.HCl has m. p. $175^\circ\text{--}177^\circ$); **414**.

p-Dimethyl-aminobenzoic acid. $C_9H_{11}O_2N = Me_2N.C_6H_4.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 9.4$ (solub.); $= 8.6$ (cond.).

$k_B \times 10^{12}$ at $25^\circ = 3.25$ (solub.); m. p. 235° – 236° .

$\Delta(2260) = 49.0$.

Na.A at 25° , $\Delta(32) = 67.0$, $(1024) = 79.0$; **890**.

p-Dimethyl-aminobenzoic acid methyl ester. $C_{10}H_{13}O_2N$.

$k_B \times 10^{12}$ at $25^\circ = 3.34$ (solub.); m. p. 102° ; **890**.

m-Dimethyl-aminophenol. (m-Hydroxy-dimethyl-aniline).

$C_8H_{11}ON = Me_2N.C_6H_4.OH$.

In Et alc., alone and with NaOH; m. p. 85° ; **1508**.

2,5-Dimethyl-1-amino-1,3,4-triazole. (Dimethyl-isodihydrotetrazine). $C_4H_8N_4$.

$k_B \times 10^{10}$ [at 25°] $= 1.4$ (solub.); m. p. 199° ; **428**.

$\alpha\alpha$ -Dimethyl- α' -iso-amylsuccinic acid.

$C_{11}H_{20}O_4 = CO_2H.CMe_2.CH(C_5H_{11}).CO_2H$.

$k_A \times 10^4$ at $25^\circ = 6.16$; diminishes on diln.; m. p. 143° – 144° .

$\mu(121.2) = 83.4$, $(969.6) = 184.2$, $(\infty) = [351]$; **236**.

Dimethyl-aniline. $C_8H_{11}N = C_6H_5.NMe_2$.

$k_B \times 10^{10}$ at $18^\circ = 2.42$ (colorim.); **1777**.

In HBr, HCl and HI, good cond.; in H_2S , poor cond.; **1897**. In

SO_2 ; **1842**. In NH_3 , qual.; **606**. In benzene, no cond.; **1802**.

Cond. with acetic acid; **1011**, **1388**. With picric acid; **1802**.

With allyl thiocarbimide, no cond.; **1223**. As solvent; **1552a**.

B.HCl at 25° , $\Delta(64) = 93.6$, $(256) = 98.3$; **270**, **1864**. – B. H_2SO_4 ; **1864**.

Dimethyl-aniline-4-sulphonic acid.

$C_8H_{11}O_3NS = Me_2N.C_6H_4.SO_3H$. [$NMe_2 = 1$.]

$k_A \times 10^4$ at $25^\circ = 3.75$.

$\Delta(32) = 36.6$, $(512) = 124.2$, $(\infty) = 353$; **492**.

Dimethyl-anthranilic acid see o-Dimethyl-aminobenzoic acid.

Dimethyl-arsinic acid see Cacodylic acid.

5,5-Dimethyl-barbituric acid. $C_6H_8O_3N_2$.

$k_A \times 10^8$ at $25^\circ = 7.3$.

$\mu(64) = 0.9$; **1996**.

2,4-Dimethyl-benzoic acid. (1,3-Dimethyl-4-benzoic acid. m-Xylic acid). $C_9H_{10}O_2 = Me_2.C_6H_3.CO_2H$. [$CO_2H = 1$; $Me = 2, 4$.]

$k_A \times 10^6$ at $25^\circ = 9$; diminishes on diln.

$\Delta(1024) = 91.9$, $(2048) = 119.5$, $(\infty) = 352$; **1418**.

2,5-Dimethyl-benzoic acid. (1,4-Dimethyl-2-benzoic acid. p-Xylic acid). $C_9H_{10}O_2$. [$CO_2H = 1$; $Me = 2, 5$.]

$k_A \times 10^4$ at $25^\circ = 1.2$; increases on diln.

$\Delta(512) = 75.6$, $(1024) = 102.7$, $(\infty) = 352$; **1418**.

3,5-Dimethyl-benzoic acid. (1,3-Dimethyl-5-benzoic acid. Mesitylenic acid). $C_9H_{10}O_2$. $[CO_2H=1; Me=3, 5.]$

$k_A \times 10^5$ at $25^\circ = 4.8$; **175**. = 7.3; **1418**. [These, apparently, are measurements of different acids.]

$\Lambda(835.6) = 65.4$, $(1671.2) = 87.0$, $(\infty) = 354$; **175**. $\Lambda(2048) = 112.3$, $(\infty) = 352$; **1418**.

Dimethyl-benzyl amine. $C_9H_{11}N = PhCH_2.NMe_2$.

$k_B \times 10^5$ at $25^\circ = 1.05$.

$\Lambda(36.1) = 3.7$, $(578.2) = 15.2$, $(\infty) = 196$; **664**.

Dimethyl-benzylsuccinic acid.

$C_{13}H_{16}O_4 = CO_2H.CMe_2.CH(PhCH_2).CO_2H$.

$k_A \times 10^4$ at $25^\circ = 4.55$; m. p. 139° ; **189**, **1838**. = 0.59; m. p. $128^\circ - 130^\circ$; methylbenzylglutaric acid?; **201**.

$\mu(64) = 55.0$, $(512) = 133.1$, $(\infty) = 350$; **1838**.

$\alpha\delta$ -Dimethyl-butane- $\alpha\beta\delta$ -tricarboxylic acid.

$C_9H_{14}O_6 = CO_2H.CHMe.CH(CO_2H).CH_2.CHMe.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.6$; increases on diln.; m. p. 107° .

$\mu(83.5) = 39.1$, $(668.2) = 100.4$; **813**.

Dimethyl- β -iso-butylethylenelactic acid.

$C_9H_{18}O_5 = iso-Bu.CH(OH).CMe_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.47$; m. p. 81° ; **1034**, **1704**.

At 25° , $\mu(35.6) = 7.9$, $(570.2) = 30.2$, $(\infty) = 349$; **1704**.

$\alpha\alpha$ -Dimethyl- α' -iso-butylsuccinic acid.

$C_{10}H_{18}O_4 = CO_2H.CMe_2.CH(iso-Bu).CO_2H$.

$k_A \times 10^4$ at $25^\circ = 4.32$; m. p. $143^\circ - 144^\circ$.

$\mu(273.0) = 101.4$, $(1092.0) = 171.5$; **236**.

Dimethyl-coumalic acid see *iso*-Dehydroacetic acid.

Dimethyl-cyanuric acid see Cyanuric acid dimethyl ester.

1,3-Dimethyl-cyclohexane-3-carboxylic acid. $C_9H_{16}O_2$.

$k_A \times 10^6$ [at 25°] = 6.30.

$\Lambda(282.1) = 14.5$, $(1128.4) = 28.4$, $(\infty) = 352$; **2026**.

cis-1,3-Dimethyl-cyclohexane-5-carboxylic acid. $C_9H_{16}O_2$.

$k_A \times 10^6$ [at 25°] = 1.07; m. p. $65^\circ - 65.5^\circ$.

$\Lambda(225.1) = 17.5$, $(900.4) = 34.4$, $(\infty) = 352$; **2026**.

trans-1,3-Dimethyl-cyclohexane-5-carboxylic acid. $C_9H_{16}O_2$.

$k_A \times 10^6$ [at 25°] = 1.09; m. p. $67^\circ - 67.5^\circ$.

$\Lambda(312.2) = 19.5$, $(1249.2) = 39.3$, $(\infty) = 352$; **2026**.

1,2-Dimethyl-cyclopropane-1,2-dicarboxylic acid. (1,2-Dimethyl-trimethylene-1,2-dicarboxylic acid). $C_7H_{10}O_4$.

$k_A \times 10^5$ at $25^\circ = 9.90$; m. p. $149^\circ - 150.5^\circ$.

$\mu(26.4) = 17.5$, $(211.4) = 48.6$, $(\infty) = 380$; **814**.

1,3-Dimethyl-desoxyxanthine see **1,3-Dimethyl-2-oxy-1,6-dihydropurine**.

Dimethyl diethyl ammonium hydroxide. $C_6H_{17}ON = Me_2Et_2N.OH$.

B.Cl at 25° , $\Lambda(32) = 93.8$, $(1024) = 105.9$; **270**.

Dimethyl-dihydro-resorcinol. $C_8H_{12}O_3 = C_6H_{11}O(OH)$.

$k_A \times 10^6$ at $25^\circ = 7.1$ aq.; m. p. $130^\circ - 148^\circ$.

$\Lambda(64) = 7.8$, $(1024) = 30.8$, $(\infty) = 374$; **1588**.

In pyridine; **754**.

Dimethyl-iso-dihydro-tetrazine see **Dimethyl-amino-triazole**.

α -Dimethyl-dihydroxy-adipic acid.

$C_8H_{14}O_6 = CO_2H.MeC(OH).CH_2.CH_2.(OH)CMe.CO_2H$.

$k_A \times 10^4 = 3.17$; m. p. 212° ; **2025**.

γ -Dimethyl-dihydroxy-adipic acid. $C_8H_{14}O_6$.

$k_A \times 10^4 = 3.30$; m. p. $191^\circ - 192^\circ$; **2025**.

Dimethyl-dihydroxy-glutaric acid. $C_7H_{12}O_6 = CH_2(MeC.OH.CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 1.8$; diminishes on diln.; m. p. $103^\circ - 104^\circ$.

$\mu(36.2) = 80.0$, $(1159.7) = 256.6$, $(\infty) = 353$; **2018**.

Dimethyl-dihydroxy-glutaric lactone. $C_7H_{10}O_5$.

$k_A \times 10^3$ at 25° is about 5.5; diminishes on diln. from change of lactone to acid.

$\mu(41.1) = 134.7$, $(1315.5) = 306.0$; **2018**.

Dimethyl-dimethylamino-methyl carbinol benzoate. (Methyl stovaine derivative). $C_{12}H_{19}O_2N = PhCO.O.CMe_2.CH_2.NMe_2$.

$k_B \times 10^7$ at $15^\circ = 3.22$ (hydrol.); **1779**, **1777**.

1,3-Dimethyl-2,6-dioxy-purine. (1,3-Dimethyl-xanthine. Theophylline). $C_7H_8O_2N_4$.

$k_A \times 10^9$ at $25^\circ = 1.62$ (sapon.).

$k_B \times 10^{14}$ at $25^\circ = 1.9$ (sapon.). At $40.1^\circ = 5.5$ (sapon.); **1997**.

1,7-Dimethyl-2,6-dioxy-purine. (1,7-Dimethyl-xanthine. Paraxanthine). $C_7H_8O_2N_4$.

$k_A \times 10^9$ at $25^\circ = 2.22$ (sapon.).

$k_B \times 10^{14}$ at $40.1^\circ = 3.29$ (solub.); **1997**.

3,7-Dimethyl-2,6-dioxy-purine. (3,7-Dimethyl-xanthine. Theobromine). $C_7H_8O_2N_4$.

$k_A \times 10^8$ at $18^\circ = 1.3$ aq.; **1391**. At $25^\circ = 0.011$ (sapon.); **1997**.

$k_B \times 10^{14}$ at $18^\circ = 1.5$ (hydrol.); **1391**; (colorim.); **1775**. At $40.1^\circ = 4.6$ (solub.); **1997**. = 16 (catal.); **1995**.

At 18° , $\mu(601.3) = 1.0$, $(1202.6) = 1.4$, $(\infty) = 335$. At 25° , $\mu(601.3) = 1.7$, $(1202.6) = 2.2$, $(\infty) = [372]$; **1391**. — **1241**.

In HCN, no cond.; **943**. In NH_3 , qual.; **606**.

Cond. with NaOH and HCl; **1391**.

β -Dimethyl-ethenyl-tricarboxylic acid.

$C_7H_{10}O_6 = CO_2H.CHMe.CMe(CO_2H)_2$.

$k_A \times 10^8$ at $25^\circ = 5$; diminishes, then increases on diln.; m. p. $156^\circ - 158^\circ$.

$\mu(32) = 115.5$, $(1024) = 322$, $(\infty) = 352$; **1839**.

Dimethyl-ethenyl-tricarboxylic acid see *iso*-Butenyltricarboxylic acid.

Dimethyl-ethylacetic acid. $C_6H_{12}O_2 = CMe_2Et.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 9.57$.

$\Lambda(32) = 6.1$, $(1024) = 33.8$, $(\infty) = 352$; **180**.

Dimethyl-ethyl carbinol. $C_6H_{12}O = CMe_2Et.OH$.

Cond. with oxalic acid; **45**.

Dimethyl-ethyl-ethylenelactic acid.

$C_7H_{14}O_3 = Et.CH(OH).CMe_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.50$; m. p. 103° ; **1704**, **1706**.

$\mu(30.2) = 7.4$, $(987.4) = 40.0$, $(\infty) = 350$; **1704**.

Dimethyl-ethylphenyl ammonium hydroxide.

$C_{10}H_{17}ON = (Me_2)(Et)(Ph)N.OH$.

B.Cl at 25° , $\Lambda(32) = 88.4$, $(1024) = 100.8$; **270**.

Dimethyl-ethylsuccinic acid. $C_8H_{14}O_4 = CO_2H.CMe_2.CHEt.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 5.6$; m. p. 139° – 140° ; **189**, **198**, **236**, **1264**, **1838**.

[Two acids, one of m. p. 62° , $k \times 10^5 = 5.7$, the other of m. p. 105° , $k \times 10^5 = 5.9$, given in **201**, apparently are methyl-ethyl glutaric acids.]

$\mu(32) = 43.7$, $(1024) = 183.4$, $(\infty) = 351$; **1838**.

Dimethyl-fumaranilic acid. (Dimethyl-maleinanilic acid).

$C_{12}H_{13}O_2N = NH(Ph).CO.CMe: CMe.CO_2H$.

$NH_4.A$, $\Lambda(28.3) = 120.0$, $(906.9) = 187.7$; m. p. 67° – 70° ; (the acid has m. p. 59° – 64°); **1749**.

2,4-Dimethyl-furfurane-3-carboxylic acid. $C_7H_8O_3$.

$k_A \times 10^5$ at $25^\circ = 1.1$; m. p. 122° .

$\Lambda(512) = 25.5$, $(1024) = 36.0$, $(\infty) = 356$; **559**.

***aa'*-Dimethyl-glutaconic acid.**

$C_7H_{10}O_4 = CO_2H.CHMe.CH: CMe.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.29$; diminishes on diln.; m. p. 146° – 147° .

$\mu(32.5) = 22.2$, $(1040) = 102.5$, $(\infty) = 353$; **1704**.

***fum.-sym.*-Dimethyl-glutaric acid.** ($\alpha\alpha$ -acid).

$C_7H_{12}O_4 = CH_2(CHMe.CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 5.9$; m. p. 140° – 141° ; **69**, **60**, **63**, **1473**, **1704**.

Second $k_A \times 10^6 = 1.5$ (inversion); **1638**.

At 25° , $\mu(207.6) = 36.3$, $(1660.8) = 94.4$, $(\infty) = 351$; **1704**.

***mal.-sym.*-Dimethyl-glutaric acid.** (*p*-acid. *cis*-acid). $C_7H_{12}O_4$.

$k_A \times 10^5$ at $25^\circ = 5.5$; increases on diln.; m. p. 127° – 128° ; **60**, **175**, **232**, **1473**, **1704**, **1838**, **2018**.

Second $k_A \times 10^6 = 1.6$ (inversion); **1638**.

At 25° , $\mu(293) = 10.9$, $(1172) = 76.6$, $(\infty) = 351$; **1704**.

$\beta\beta$ -Dimethyl-glutaric acid. $C_7H_{12}O_4 = CO_2H.CH_2.CMe_2.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.3$; **1418**, $= 0.17$; **61**.

$\mu(64) = 39.9$, $(\infty) = 352$; m. p. 100° – 101° ; **1418**; – $\mu(64) = 11.3$; **61**. [The values of μ given in **61** give $k = 0.17$, not 2.2.]

Note that the melting-point and the value of k correspond to a methylethyl-succinic acid.]

sym.-Dimethyl-glutaric acid. ($\alpha\alpha$ -acid, β -acid and m -acid). $C_7H_{12}O_4$.
 $k_A \times 10^5$ at $25^\circ = 5.0-5.5$; in some measurements increases, in others diminishes, on diln.; m. p. $99^\circ-101^\circ$, $102^\circ-104^\circ$, $105^\circ-106^\circ$; **65, 70, 175, 201, 1838, 2018**. [This acid was a mixture of isomers.]

Dimethyl-glycocoll see **Dimethyl-aminoacetic acid**.

Dimethyl-glyoxime. $C_4H_8O_2N_2$.

In complex compounds; **1751, 1753, 1754, 1756, 1757, 1759, 1760a, 1761**.

Dimethyl-hexylethylenelactic acid see **Dimethyl-hydroxy-pelargonic acid**.

Dimethyl-hydroresorcylic acid methyl ester.



$k_A \times 10^5$ at $25^\circ = 4.9$ aq.

$\Delta(28) = 13.4$, $(896) = 69.9$, $(\infty) = 372$; **1588**.

$\alpha\alpha'$ -Dimethyl- β -hydroxy-glutaric acid.



$k_A \times 10^4$ at $25^\circ = 1.2$; m. p. $136^\circ-137^\circ$; **1473, 1475, 1704**.

$\mu(74.6) = 29.9$, $(1194.2) = 104.9$, $(\infty) = 350$; **1704**.

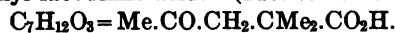
$\alpha\alpha'$ -Dimethyl- β -hydroxy-glutaric acid acetyl derivative see **Dimethyl-acetoxy-glutaric acid**.

α -Dimethyl- β -hydroxy-pelargonic acid. (Dimethyl-hexylethylenelactic acid). $C_{11}H_{22}O_3 = C_6H_{13}.CH(OH).CMe_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.9$; diminishes on diln.

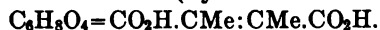
$\mu(124.4) = 16.7$, $(1990.4) = 54.2$, $(\infty) = 350$; **1704**.

α -Dimethyl-laevulinic acid. (Mesitonic acid).



$k_A \times 10^5$ [at 25°] = 1.08; m. p. $74^\circ-77^\circ$; **202**.

Dimethyl-maleic acid. (Pyrocinchonic acid).



$k_A \times 10^4$ at 25° is over 1.08; from cond. of soln. of the anhydride (m. p. 96°) which apparently polymerizes, giving too low cond.; **191, 1838**.

At 25° , $\mu(64) = 28.3$, $(1024) = 101.2$, $(\infty) = 354$; **1838**.

Dimethyl-maleic acid anhydride. $C_6H_6O_3$.

Cond. of aq. soln.; **1838**.

Dimethyl-maleinanilic acid see **Dimethyl-fumaranilic acid**.

Dimethyl-malonic acid. (β -iso-Pyrotartaric acid).



$k_A \times 10^4$ at $18^\circ = 7.6$ (colorim.); **1563**. At $25^\circ = 7.6$; m. p. 185° ; **1838, 1371**.

Second $k_A \times 10^7 = 3$ (inversion); **1335, 1638.**

At 25° , $\mu(32) = 51.3$, $(1024) = 204.4$, $(\infty) = 356$; **1838.**

Dimethyl-malonic acid mono ethyl ester.

$C_7H_{12}O_4 = Me_2C(CO_2H)(CO_2Et)$.

$k_A \times 10^4$ at $25^\circ = 3.12$; diminishes, then increases on diln.

$\mu(44.0) = 38.9$, $(1408.0) = 167.5$, $(\infty) = 352$; **1859.**

Dimethyl-2-naphthylamine-8-sulphonic acid.

$C_{12}H_{12}O_2NS = Me_2N.C_{10}H_6.SO_3H$.

$k_A \times 10^4$ is about 2 (colorim.); m. p. 244° ; **1773.**

Dimethyl-nitrobarbituric acid. $C_6H_7O_5N_3 = CO(NMe.CO)_2C:NO_2H$.

At 24.5° , $\Lambda(32) = 313.3$, $(1024) = 337.6$, $(\infty) = 352$; pure acid is dec. at 152° , slightly impure is dec. at 132° ; **845.**

1,3-Dimethyl-2-oxy-1,6-dihydro-purine. (Desoxytheophylline. 1,3-Dimethyl-desoxyxanthine). $C_7H_{10}ON_4$.

$k_A \times 10^{12}$ at $25^\circ = 5.61$ (sapon.); m. p. 215° – 225° (in vac.); **1707.**

Dimethyl-parabanic acid. $C_5H_6O_3N_2$.

At 25° , $\Lambda(32) = 0.33$, $(128) = 0.49$; **1748.**

2,6-Dimethyl-pentane-2,6-tetracarboxylic acid.

$C_{11}H_{18}O_8 = (CO_2H)_2CMe.(CH_2)_3.CMe(CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 3.7$; increases on diln.

$\mu(17.2) = 77.6$, $(275.0) = 240.5$, $(\infty) = 350$; **1859.**

Dimethyl-phenonaphthoxazine see **Meldola Blue.**

2,3-Dimethyl-phenyl-2,5-benzyliminopyrazole see **2,5-Benzyliminopyrine.**

Dimethyl-p-phenylene diamine. $C_8H_{12}N_2 = Me_2N.C_6H_4.NH_2$.

At 25° , $\Lambda(13)$ is over 0.19; **741.**

Dimethyl-phenyl-ethylenelactic acid see **Phenylhydroxy-pivalic acid.**

Dimethyl-phenyl-hydroxy-propionic acid see **Phenylhydroxy-pivalic acid.**

2,3-Dimethyl-1-phenyl pyrazolone. (Antipyrine). $C_{11}H_{12}ON_2$.

In aq., little or no cond.; **977, 1256.** 0.1 normal soln. cond. = 9.02×10^{-6} ; **214.**

B.HI at 18° , $\Lambda(20) = 222$, $(1000) = 377$; **1256.**

3,4-Dimethyl-1-phenyl pyrazolone. $C_{11}H_{12}ON_2$.

In molten state, conducts fairly well.

Cond. in aq. equals that of a 1% NaCl soln.; **977.**

2,6-Dimethyl-4-phenylpyridine-3,5-dicarboxylic acid see **Phenyllutidine-dicarboxylic acid.**

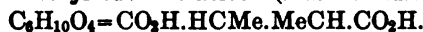
Dimethyl-pimelic acid. $C_9H_{16}O_4$.

$k_A \times 10^5$ at $25^\circ = 3.4$; at 25° , $\mu(128) = 22.1$, $(1024) = 59.4$, $(\infty) = 350$; the acid, m. p. 71° – 73° and 74° – 76° , of **1412, 1859, 2018**, is made up of the following two isomers.

- anti- $\alpha\alpha'$ -Dimethyl-pimelic acid.** $C_9H_{16}O_4 = CH_3(CH_2.CHMe.CO_2H)_2$.
 $k_A \times 10^5$ [probably at 25°] = 3.43; m. p. 76° – 76.5° ; **965**.
- para- $\alpha\alpha'$ -Dimethyl-pimelic acid.** $C_9H_{16}O_4$.
 $k_A \times 10^5$ [probably at 25°] = 3.44; m. p. 81° – 81.5° ; **965**.
- Dimethyl- α -propionyl thetine.** $C_5H_{12}O_3S = OH.SMMe_2.CHMe.CO_2H$.
 $k_B \times 10^{13}$ at 25° = 2.1 (hydrol.); **350** and **1150**.
 At 25° , $\mu(32) = 4.1$, (256) = 6.9.
 B.Br. – B.Cl, $\mu(32) = 93$, (1024) = 103; $M(32) = 275.6$; **350**.
- Dimethyl- β -propionyl thetine.** $C_5H_{12}O_3S = OH.SMMe_2.CH_2.CH_2.CO_2H$.
 $k_B \times 10^{11}$ at 25° = 1.2 (hydrol.); **350** and **1150**.
 B.Br, $\mu(32) = 95$, (1024) = 105; $M(32) = 123.8$; **350**.
- α -Dimethyl- β -iso-propyl-ethylenelactic acid.**
 $C_8H_{16}O_3 = Me_2CH.CH(OH).CMMe_2CO_2H$.
 $k_A \times 10^6$ at 25° = 2.2; increases on diln.; m. p. 92° .
 $\mu(34.8) = 9.5$, (1119.7) = 51.2, (∞) = 350; **1704**.
- Dimethyl-propylsuccinic acid.** $C_9H_{16}O_4 = CO_2H.CMe_2.CHPr.CO_2H$.
 $k_A \times 10^4$ at 25° = 6.0; m. p. 145° ; **236** = 5.5; m. p. 140° – 141.5° ; **189**, **1838**. The acids, m. p. 101° and 51° , $k = 5 \times 10^{-5}$, in **201** are, apparently, Methylpropyl glutaric acids.
 At 25° , $\mu(108.5) = 78.7$, (868.0) = 176.5; **236**. $\mu(64) = 59.8$, (1024) = 183, (∞) = 350; **1838**.
- $\alpha\alpha$ -Dimethyl- α' -iso-propylsuccinic acid.** $C_9H_{16}O_4$.
 $k_A \times 10^4$ at 25° = 1.58; diminishes on diln. $\mu(66.1) = 35.7$, (528.8) = 85.1, (∞) = [351]; m. p. 141° – 142° ; **236**.
- N-3-Dimethyl pyrazole.** $C_5H_8N_2$.
 $k_B \times 10^{11}$ [probably at 25°] = 1.3 (solub.); b. p. 148° ; **428**.
- 3,5-Dimethyl pyrazole.** $C_5H_8N_2$.
 $k_B \times 10^{10}$ [probably at 25°] = 2.5 (solub.); m. p. 107° ; **428**.
- 2,6-Dimethyl-pyridine.** (2,6- or $\alpha\alpha$ -Lutidine). $C_7H_8N = Me_2.C_5H_3N$.
 $k_B \times 10^7$ at 25° = 1.
 $\mu(32) = 0.4$, (256) = 1.2; **1293**.
 In SO_2 ; **1842**.
 B.HCl at 25° , $\Lambda(50) = 92.2$. – B. H_2SO_4 ; **1864**. – B.MeCl; **270**.
- Dimethyl-pyridine.** C_7H_8N .
 B.HCl at 25° , $\Lambda(64) = 95.5$, (256) = 102.5; **270**.
- 2,6-Dimethyl-pyridine-3,5-dicarboxylic acid.** ($\alpha\alpha'$ -acid. Lutidine-dicarboxylic acid). $C_9H_8O_4N = Me_2.C_5NH(CO_2H)_2$.
 $k_A \times 10^8$ at 25° = 3.7; increases on diln.
 $\mu(128) = 168.5$, (1024) = 288.5, (∞) = 352; **1372**.
- 2,4-Dimethyl-pyridine-3,5-dicarboxylic acid.** ($\alpha\gamma$ -acid). $C_9H_8O_4N$.
 $k_A \times 10^8$ at 25° = 5.5; diminishes on diln.
 $\mu(128) = 197$, (1024) = 296, (∞) = 352; **1372**.
- 2,6-Dimethyl-pyrone.** $C_7H_6O_2$.
 $k_A \times 10^{15}$ at 25° = 8 (hydrol.).

- $k_B \times 10^{14}$ at $0^\circ = 3$ (hydrol.); **1827**; $= 0.3$ (corrected); **1150**. At $25^\circ = 2$ (hydrol.) **1827**; $= 0.8$ (corrected); **1150**. At $40.2^\circ = 6.5$ (catal.); **1995**.
 Cond. at 25° , $\mu(32) = 0.10$, $(512) = 0.36$, $(\infty) = 202$; **1827**.
 In HBr and HCl; **1233a**. In H_2SO_4 ; **750**, **157a**. In $AsCl_3$; **1842**. In SO_2 ; **1827**, **1842**. In acetonitrile; **1827**. In EtBr; **1435**. In hydrazine hydrate; **1828**.
 Cond. with HCl and H_2SO_4 ; **741**. With NaOH; **1827**. With tribromo-acetic acid; **1436**, **1827**. With trichloro-acetic acid; **1435**. With picric acid; **1827**. With potassium trichloro-acetate; **1439**.
 Na.A; **1827**. - B.HCl at 25° , $\Lambda(32) = 369$; **738**, **401**. - B. H_2SO_4 ; **741**. - B.Oxalate; **401**.
Dimethyl-pyrone carboxylic acid. $C_8H_6O_4$.
 $k_A \times 10^4 = 3.85$; m. p. $98.5^\circ - 99^\circ$.
 $\mu(43.2) = 43.2$, $(346.0) = 104.2$; **557**.
2,4-Dimethyl-pyrrole-3-carboxylic acid. (m-Dimethyl- β -acid).
 $C_7H_8O_3N$.
 $k_A \times 10^7$ at $25^\circ = 7.5$ aq.; m. p. 186° .
 $\mu(228.8) = 4.6$, $(915.2) = 9.3$, $(\infty) = 356$; **23**.
2,4-Dimethyl-pyrrole-5-carboxylic acid. (m-Dimethyl- α -acid).
 $C_7H_8O_3N$.
 $k_A \times 10^6$ at $25^\circ = 2.15$ aq.; diminishes on diln.; m. p. 137° .
 $\mu(790) = 14.3$, $(1580) = 17.0$, $(\infty) = 356$; **23**.
2,5-Dimethyl-pyrrole-3-carboxylic acid. (p-Dimethyl- β -acid).
 $C_7H_8O_3N$.
 $k_A \times 10^6$ at $25^\circ = 1.1$ aq.; m. p. 213° .
 $\mu(307.5) = 6.6$, $(1230.0) = 13$, $(\infty) = 356$; **23**.
2,4-Dimethyl-pyrrole-3,5-dicarboxylic acid. (m-acid). $C_8H_6O_6N$.
 $k_A \times 10^5$ at $25^\circ = 2.13$ aq.; diminishes on diln.; m. p. 260° dec.
 $\mu(1320) = 54.2$, $(2640) = 73$, $(\infty) = 355$; **23**.
2,5-Dimethyl-pyrrole-3,4-dicarboxylic acid. (p-acid). $C_8H_6O_6N$.
 At 25° , $\mu(1316) = 323.6$, $(\infty) = 356$; m. p. 251° ; **23**.
sym.-anti-Dimethyl-succinic acid. (cis- or maleinoid).
 $C_6H_{10}O_4 = CO_2H.CHMe.CHMe.CO_2H$.
 $k_A \times 10^4$ at $25^\circ = 1.38$; diminishes on diln.; m. p. $120^\circ - 121^\circ$; **280**. $= 1.23$; **200**, **234**, **1838**, **2018**.
 Second $k_A \times 10^7 = 5.3$ (inversion); **1638**.
 At 25° , $\mu(56.6) = 30.0$, $(904.8) = 104.4$, $(\infty) = 354$; **280**.
sym.-anti-Dimethyl-succinic acid mono methyl ester.
 $C_7H_{12}O_4 = CO_2H.CHMe.CHMe.CO_2Me$.
 $k_A \times 10^5$ at $25^\circ = 4.5$; m. p. 38° .
 $\mu(22) = 11.1$, $(175.8) = 29.8$, $(\infty) = 352$; **244**.

sym.-p-Dimethyl-succinic acid. (*trans*- or fumaroid).



$k_A \times 10^4$ at $25^\circ = 2.08$; diminishes on diln.; m. p. 193° ; **280**.
 $= 1.91$; **1838, 175, 200, 234, 1418, 2018**.

Second $k_A \times 10^6 = 1.3$ (inversion); **1638**.

At 25° , $\mu(100) = 47.7$, $(800) = 117.5$, $(\infty) = 354$; **280**.

In Me alc.; **2029**.

sym.-p-Dimethyl-succinic acid mono methyl ester. $\text{C}_7\text{H}_{12}\text{O}_4$.

$k_A \times 10^5$ at $25^\circ = 6$; increases on diln.

$\mu(34.5) = 15.5$, $(275.8) = 42.8$, $(\infty) = 352$; m. p. 49° ; **244**.

asym.-Dimethyl-succinic acid. $\text{C}_6\text{H}_{10}\text{O}_4 = \text{CO}_2\text{H}.\text{CMe}_2.\text{CH}_2.\text{CO}_2\text{H}.$

$k_A \times 10^5$ at $25^\circ = 8.0$; increases, then diminishes on diln.; m. p. 140° ; **61, 175, 201, 234, 1418, 1838**.

$\mu(32) = 17.3$, $(512) = 63.5$, $(\infty) = 353$; **1838**.

asym.-Dimethyl-succinic acid α -mono methyl ester.



$k_A \times 10^5$ at $25^\circ = 2.28$; increases on diln.; m. p. 52° .

$\mu(25.2) = 8.3$, $(201.4) = 23.2$, $(\infty) = 352$; **244**.

asym.-Dimethyl-succinic acid β -mono methyl ester.



$k_A \times 10^5$ at $25^\circ = 2.56$; increases on diln.; m. p. 40.5° .

$\mu(27.6) = 9.1$, $(220.8) = 25.8$, $(\infty) = 352$; **244**.

Dimethyl sulphide. (Methyl sulphide). $\text{C}_2\text{H}_6\text{S} = \text{Me}_2\text{S}.$

$\alpha \times 10^8$ at 25° is less than 1; b. p. $35^\circ\text{--}36.5^\circ$; **1843, 1844**.

As solvent; (**1844**).

B.HNO_3 , $\Lambda(32) = 391$. - B.Br_2 ; **760**.

Dimethyl thietine. $\text{C}_4\text{H}_{10}\text{O}_2\text{S} = \text{OH}.\text{SMe}_2.\text{CH}_2.\text{CO}_2\text{H}.$

$k_B \times 10^{13}$ at $25^\circ = 1.9$ (hydrol.); **350** and **1150**.

At 25° , $\Lambda(32) = 2.2$, $(256) = 2.1$.

B.Cl , $\Lambda(32) = 103$, $(1024) = 115$; $\text{M}(32) = 277.7$. - B.Br ; **350**.

Dimethyl thietine ethyl ester. $\text{C}_6\text{H}_{14}\text{O}_2\text{S} = \text{OH}.\text{SMe}_2.\text{CH}_2.\text{CO}_2\text{Et}.$

At 25° , $\Lambda(32) = 2.7$, $(256) = 3.1$, $(512) = 7.4$.

B.Br , $\Lambda(32) = 91.6$, $(1024) = 103.9$; **350**.

Dimethyl-thiazole. $\text{C}_5\text{H}_7\text{NS}.$

B.HCl at 25° , $\Lambda(50) = 121.4$. - $\text{B.H}_2\text{SO}_4$; **1864**.

2,4-Dimethyl-thiazole-5-carboxylic acid. (meso-Methylthiazole- α -methyl- β -carboxylic acid). $\text{C}_6\text{H}_7\text{O}_2\text{NS}.$

$k_A \times 10^4$ at $25^\circ = 1.25$; increases on diln.

$\Lambda(263.2) = 55.7$, $(1052.8) = 106.4$, $(\infty) = 357$; **175**.

Dimethyl-o-toluidine. $\text{C}_9\text{H}_{11}\text{N} = \text{Me}.\text{C}_6\text{H}_4.\text{NMe}_2$. [$\text{Me} = 1$; $\text{NMe}_2 = 2$.]

$k_B \times 10^9$ at $15^\circ = 3.08$ (colorim.); **1777**.

B.Picrate in benzene, no cond.; **1802**.

Dimethyl-m-toluidine. $\text{C}_9\text{H}_{11}\text{N}.$

$k_B \times 10^9$ at $25^\circ = 2.4$ (solub.); **660, 957**.

Dimethyl-p-toluidine. $C_9H_{13}N$.

$k_B \times 10^9$ at $15^\circ = 6.36$ (colorim.); 1777.

Dimethyl-triazole. $C_4H_7N_3$.

$k_B \times 10^{11}$ [probably at 25°] = 6.2 (sapon.); m. p. 142° ; 428.

aa-Dimethyl-tricarballic acid.

$C_8H_{12}O_6 = CO_2H.CMe_2.CH(CO_2H).CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 3.2$; diminishes on diln.

$\mu(23.7) = 29.2$, $(189.4) = 75.1$, $(\infty) = [351]$; m. p. 143° ; 237.

aa-Dimethyl-tricarballic acid α ?-mono methyl ester.

$C_9H_{14}O_6 = CO_2H.CMe_2.CH(CO_2H).CH_2.CO_2Me$.

$k_A \times 10^4$ at $25^\circ = 1.8$; diminishes on diln.

$\mu(31.2) = 25.3$, $(249.6) = 65.9$, $(\infty) = [351]$; 237.

aa-Dimethyl-tricarballic acid β ?-mono methyl ester. $C_9H_{14}O_6$.

$k_A \times 10^5$ at $25^\circ = 8.6$; diminishes on diln.

$\mu(35.8) = 18.9$, $(71.6) = 26.3$, $(\infty) = [351]$; 237.

aa'-Dimethyl-tricarballic acid.

$C_8H_{12}O_6 = MeCH(CO_2H).CH.CO_2H.CHMe(CO_2H)$.

a) acid. ($\alpha\gamma$ -acid.)

$k_A \times 10^4$ at $25^\circ = 4.45$; m. p. 206° – 207° ; 237, 2017.

$\mu(33.7) = 40.2$, $(269.7) = 101.7$, $(\infty) = [351]$; 237.

b) acid. ($\alpha\gamma$ -acid).

$k_A \times 10^4$ at $25^\circ = 5.4$; m. p. 174° ; 237, 2017.

$\mu(20.7) = 35.0$, $(165.6) = 90.6$, $(\infty) = [351]$; 237.

c) acid. ($\alpha\gamma$ -acid).

$k_A \times 10^4$ at $25^\circ = 5.72$; diminishes on diln.; m. p. 143° ; 237. = 5.1;
m. p. 148° – 149° ; 2017.

$\mu(21.8) = 37$, $(174.2) = 94.3$, $(\infty) = [351]$; 237.

Dimethyl-trimethylene-dicarboxylic acid see **Dimethyl-cyclopropane-dicarboxylic acid.**

α -Dimethyl-uracil. $C_8H_8O_2N_2$. [Me = 2, 3.]

$k_A \times 10^{11}$ at $25^\circ = 8.8$ (catal.); m. p. 220° – 230° ; 1996.

β -Dimethyl-uracil. $C_8H_8O_2N_2$. [Me = 3, 6.]

$k_A \times 10^{11}$ at $25^\circ = 7.4$ (catal.); m. p. 258° ; 1996.

Dimethyl-violuric acid. $C_6H_7O_4N_3 = CO(NMe.CO)_2C:NOH$.

$k_A \times 10^5$ at $25^\circ = 1.57$.

$\mu(32) = 7.9$, $(512) = 29.9$, $(\infty) = 352$; 1188.

In pyridine; 754.

K.A at 25° , $\Lambda(40) = 82.5$, $(1280) = 96.3$; 1188.

Dinicotinic acid see **Pyridine-3,5-dicarboxylic acid.**

2,4-Dinitro-aniline. $C_6H_5O_4N_2 = (NO_2)_2.C_6H_5.NH_2$. [$NH_2 = 1$.]

In NH_3 ; 604; qual.; 610. In $MeNH_2$, good cond.; 637.

o-Dinitro-benzene. $C_6H_4O_4N_2 = (NO_2)_2C_6H_4$.

In NH_3 ; 604.

m-Dinitro-benzene. $C_6H_4O_4N_2$.In HBr, good cond.; in H_2S , no cond.; 1897. In NH_3 ; 604, 607.In $MeNH_2$, good cond.; 637. In pyridine, no cond. [m-Dinitro-benzene-?]; 764.**p-Dinitro-benzene.** $C_6H_4O_4N_2$.In NH_3 ; 604.**2,3-Dinitro-benzoic acid.** $C_7H_4O_6N_2 = (NO_2)_2.C_6H_3.CO_2H$. [$CO_2H=1$; $NO_2=2, 3$] $k_A \times 10^2$ at $25^\circ = 1.44$. At $40^\circ = 1.38$; diminishes on diln.; m. p. 201° and 204.1° .At 25° , $\Lambda(100) = 256$, $(1600) = 348$, $(\infty) = 377$.

In Et alc.; 1627.

2,4-Dinitro-benzoic acid. $C_7H_4O_6N_2$. $k_A \times 10^2$ at $25^\circ = 3.85$. At $40^\circ = 3.2$; diminishes on diln.; m. p. 180.9° .At 25° , $\Lambda(100) = 310.5$, $(1600) = 360.5$, $(\infty) = 377$.

In Et alc.; 1627.

2,5-Dinitro-benzoic acid. $C_7H_4O_6N_2$. $k_A \times 10^2$ at $25^\circ = 2.64$. At $40^\circ = 2.16$; diminishes on diln.; m. p. 177° .At 25° , $\Lambda(100) = 291.5$, $(1600) = 360.5$, $(\infty) = 377$.

In Et alc.; 1627.

2,6-Dinitro-benzoic acid. $C_7H_4O_6N_2$. $k_A \times 10^2$ at $25^\circ = 8.15$. At $40^\circ = 7.57$; m. p. 202° and 206° .At 25° , $\Lambda(100) = 339.5$, $(1600) = 369$, $(\infty) = 377$.

In Et alc.; 1627.

3,4-Dinitro-benzoic acid. $C_7H_4O_6N_2$. $k_A \times 10^2$ at $25^\circ = 1.63$. At $40^\circ = 1.71$; diminishes on diln.; m. p. 163.3° .At 25° , $\Lambda(100) = 124.5$, $(1600) = 284.5$, $(\infty) = 377$.

In Et alc.; 1627.

3,5-Dinitro-benzoic acid. $C_7H_4O_6N_2$. $k_A \times 10^2$ at $18^\circ = 1.6$ (colorim.); 1563. At $25^\circ = 1.63$; diminishes on diln.; 175, 1627. At $40^\circ = 1.77$; diminishes on diln.; 1627.At 25° , $\Lambda(200) = 162.5$, $(1600) = 292.5$, $(\infty) = 377$.

In Et alc.; 1627.

1,3-Dinitro-4-bromobenzene. $C_6H_3O_4N_2Br = (NO_2)_2C_6H_3.Br$.In NH_3 ; 604.**Dinitro-bromomethane.** $CHO_2N_2Br = Br.CH(NO_2)_2$. $k_A \times 10^4$ at $0^\circ = 1.7$; 796.Cond. at 0° and 25° ; 780.K.A at 0° , $\Lambda(64) = 58.3$, $(256) = 59.8$; 796.**Dinitro-butane.** $C_4H_8O_4N_2 = C_4H_8(NO_2)_2$.K.A at 25° , $\Lambda(32) = 94.6$, $(1024) = 104.5$; 796.

$\beta\beta$ -Dinitro-caproic acid. $C_6H_{10}O_6N_2 = Me_2C(CO_2H).C(NO_2)_2Me$. ?

$k_A \times 10^4$ at $25^\circ = 6.9$; diminishes on diln.

$\mu(128) = 90.8$, $(1024) = 195.2$, $(\infty) = 350$; **1370**.

Dinitro-ethane. $C_2H_4O_4N_2 = Me.CH(NO_2)_2$.

$k_A \times 10^6$ at $0^\circ = 2.3$; **796**. At $25^\circ = 5.8$; **1092**. A weak acid; **780**, **795**.

At 25° , $\Lambda(32.5) = 5.3$, $(130) = 10.2$, $(\infty) = 388$; **1092**.

K.A at 25° , $\Lambda(32) = 101.7$, $(512) = 111.0$. With HCl; **796**, **1092**.

Dinitro-ethane alcoholate. (Dinitro-ethane ethyl ester acid).

$C_4H_{10}O_5N_2 = MeCH(NO_2).NO(OH)(OEt)$.

$k_A \times 10^4$ at $25^\circ = 1.7$.

$\Lambda(128) = 49.6$, $(1024) = 122.1$, $(\infty) = 356.4$.

K.A at 25° , $\Lambda(32) = 86.4$, $(1024) = 101.3$; **772**.

2,6-Dinitro-hydroquinone. (2,6-Dinitro-1,4-dihydroxy-benzene).

$C_6H_4O_6N_2 = (NO_2)_2C_6H_2(OH)_2$.

$k_A \times 10^5$ at $25^\circ = 7.1$.

$\mu(200) = 40.1$, $(1600) = 105.3$, $(\infty) = 353$; **70**.

Dinitro-methane. $CH_2O_4N_2 = (NO_2)_2CH_2$.

$k_A \times 10^4$ at $0^\circ = 1.4$. At $25^\circ = 2.8$; diminishes on diln.; **780**, **796**.

At 25° , $\Lambda(64) = 46.8$, $(512) = 110.6$, $(\infty) = 369$; **780**. Qual.; **795**.

K.A at 0° , $\Lambda(64) = 61.9$, $(256) = 64.9$; **796**.

2,4-Dinitro-1-naphthol-7-sulphonic acid.

$C_{10}H_6O_8N_2S = C_{10}H_4(NO_2)_2OH.SO_3H$.

[2K.A or 2Na.A is the dye Naphthol Yellow S.]

At 18° , $\mu(100) = 416$, $(1600) = 600$; **976a**. At 25° , $\Lambda(100) = 245$, $(800) = 332.9$; **1402**. At 90° , $\mu(100) = 753.9$, $(800) = 1019.2$; **976a**.

Ca.A; **976a**. - Mg.A. - 2Na.A at 25° , $\Lambda(100) = 96.4$, $(1600) = 110.1$; **1402**, **1401**. With Methylene Blue, qual.; **1401**.

Dinitro-oxybenzo furazane. $C_6H_2O_6N_4$.

$\Lambda(64) = 341.7$, $(512) = 361$; m. p. 138° with dec.; **1425**.

2,3-Dinitro-phenol. (ϵ -Dinitro-phenol).

$C_6H_4O_5N_2 = (NO_2)_2C_6H_3.OH$. [OH = 1; NO₂ = 2, 3.]

$k_A \times 10^5$ at $25^\circ = 1.3$; **70**, **847**.

$\mu(256) = 19.9$, $(1024) = 40.0$, $(\infty) = 354$; **847**.

2,4-Dinitro-phenol. (α -Dinitro-). $C_6H_4O_5N_2$.

$k_A \times 10^4$ at $25^\circ = 1$; m. p. 113° ; **847**; **70**, **1362**.

$\mu(256) = 51.7$, $(1024) = 99.9$, $(\infty) = 354$; **847**.

In NH₃, qual.; **606**. In pyridine. In piperidine; **754**. In Et alc.; **1508**, **1718**.

Cond. with NaOH; **1508**. **1718**.

2,5-Dinitro-phenol. (γ -Dinitro-). $C_6H_4O_5N_2$.

$k_A \times 10^5$ at $25^\circ = 7.0$; **70**, **847**.

$\mu(256) = 14.4$, $(1024) = 29.9$, $(\infty) = 354$; **847**.

- 2,6-Dinitro-phenol.** (β -Dinitro-). $C_6H_4O_6N_2$.
 $k_A \times 10^4$ at $25^\circ = 2.7$; m. p. 64° ; **847**. = 1.7; **70**.
 $\mu(256) = 78.5$, (1024) = 145.1, (∞) = 354; **847**.
- 3,4-Dinitro-phenol.** (δ -Dinitro-). $C_6H_4O_6N_2$.
 $k_A \times 10^4$ at $25^\circ = 4.3$; m. p. 134° ; **847**, **70**.
 $\mu(256) = 11.4$, (1024) = 22.6, (∞) = 354; **847**.
- 3,5-Dinitro-phenol.** (θ -Dinitro-). $C_6H_4O_6N_2$.
 $k_A \times 10^7$ at $25^\circ = 2.1$; m. p. 124° .
 $\mu(100) = 1.6$, (400) = 3.2, (∞) = 354; **847**.
- 2,6-Dinitro-phenol-4-sulphonic acid.** $C_6H_4O_6N_2S$. [$SO_3H = 4$.]
K.A, cond. alone and with NaOH; **1718**.
- Dinitro-propane.** $C_2H_6O_4N_2$.
K.A at 25° , $\Delta(64) = 101.3$, (512) = 107.5; **796**.
- Di-iso-nitroso-butyric acid** see **Dioximino-butyric acid**.
- 1,2-Dinitroso-3,5-dinitro-benzene.** $C_6H_2O_6N_4 = (NO)_2C_6H_2(NO_2)_2$.
 $k_A \times 10^4 = 1.1$; m. p. 172° . $\mu(2000) = 142$, (4000) = 172, (∞) = 384.
K.A, $\mu(128) = 96$, (1024) = 109.5; **1425**.
- 2,4-Dinitro-toluene.** $C_7H_6O_4N_2$.
In NH_3 , qual.; **606**.
- Dinitro-toluene nitroic acid** see **Trinitro-toluene**.
- 3,5-Dinitro-2,4,6-tribromo-phenol.**
 $C_6HO_5N_2Br_3 = (NO_2)_2C_6Br_3.OH$.
K.A, *yellow* salt, at 25° , $\Delta(32) = 112.7$, (1024) = 125.0. The *orange* and *red* salts were also measured. There is little difference between them and the yellow salt; **744**.
- syn-Dioximino-butyric acid.** (Di-iso-nitroso-butyric acid. Methyl-synglyoxime carboxylic acid).
 $C_4H_6O_4N_2 = MeC(N.OH).(OH.N)C.CO_2H$.
 $k_A \times 10^3$ at $25^\circ = 1.4$; increases on diln.
 $\mu(32) = 172.1$, (256) = 308.7, (∞) = 358; **768**.
- amphi-Dioximino-butyric acid.** (Di-iso-nitroso-butyric acid. Methyl-amphiglyoxime carboxylic acid).
 $C_4H_6O_4N_2 = MeC(N.OH).C(N.OH).CO_2H$.
 $k_A \times 10^5$ at $25^\circ = 2$; [an extrapolated value.]
Na.A, $\mu(1024-32) = 10$; **768**.
- Dioximino-propionic acid.** *Labile.* (*amphi*-Glyoxime carboxylic acid).
 $C_3H_4O_4N_2 = HC(OH.N).(OH.N)C.CO_2H$.
 $k_A \times 10^3$ at $25^\circ = 4.17$; m. p. $140^\circ-141^\circ$.
 $\mu(32) = 109.2$, (512) = 264.9, (∞) = 358; **768**.
- Dioximino-propionic acid.** *Stabile.* (*anti*-Glyoxime carboxylic acid).
 $C_3H_4O_4N_2 = HC(OH.N).(N.OH)C.CO_2H$.
 $k_A \times 10^3$ at $25^\circ = 2.85$; diminishes on diln.; m. p. 171° .
 $\mu(32) = 93.1$, (512) = 242.2, (∞) = 358; **768**.

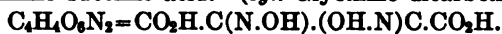
***aa*-Dioximino-succinic acid.** (*anti*-Glyoxime dicarboxylic acid).



$k_A \times 10^2$ at $25^\circ = 1$; increases on diln.

$\mu(32) = 157.4$, $(256) = 293.7$, $(\infty) = 358$; **768**.

***$\beta\beta$* -Dioximino-succinic acid.** (*syn*-Glyoxime dicarboxylic acid).



$k_A \times 10^2$ at $25^\circ = 6$ (?).

$\mu(32) = 287.4$, $(256) = 495.4$, $(\infty) = 358$; **768**.

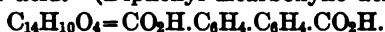
2,6-Dioxy-purine see **Xanthine**.

Dioxy-thiazole see **Diketo-tetrahydro-thiazole**.

Dipentene. $\text{C}_{10}\text{H}_{18}$.

Dipentene.2HBr, in SO_2 ; **1829**. – Dipentene.2HI, in SO_2 ; **1829**, **1842**.

Diphenic acid. (Diphenyl-dicarboxylic acid).



$k_A \times 10^4$ at 25° is about 5; inaccurate, because of impurity of aq. used for soln.

$\mu(128) = 79.2$, $(1024) = 178.0$, $(\infty) = [356]$; [in Hg.U.]; **1362**.

Diphenyl. $\text{C}_{12}\text{H}_{10} = \text{Ph}.\text{Ph}$.

In NH_3 , qual.; **606**. In acetonitrile, no cond.; **936**. In MeNH_2 , no cond.; **637**.

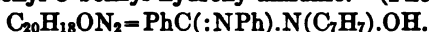
Diphenyl amine. $\text{C}_{12}\text{H}_{11}\text{N} = \text{Ph}_2\text{NH}$.

In HBr, good cond.; in H_2S , no cond.; **1897**. In HCN, very small cond.; **943**. In H_2SO_4 ; **750**. In SO_2 ; **1842**. In acetonitrile and in benzonitrile, no cond.; **936**.

Diphenyl-*p*-anisyl carbinol. $\text{C}_{20}\text{H}_{18}\text{O}_2$.

Comparative strength (colorim.); m. p. 58° – 61° ; **74**.

1,2-Diphenyl-3-benzyl-hydroxy-amidine. (Phenylbenzyl – etc.).

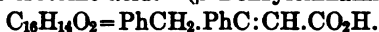


B.HCl at 25° , $M(128) = 116.6$, $(512) = 148.0$; $\Lambda(128) = 85$; m. p. 194° ; (the base has m. p. 150°); **1083**.

Diphenyl-bromomethane. $\text{C}_{12}\text{H}_{11}\text{Br}$.

In SO_2 ; **669**.

Diphenyl-crotonic acid. (β -Benzylcinnamic acid).



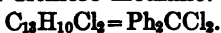
$k_A \times 10^5$ at $25^\circ = 8$; diminishes on diln.

$\Lambda(512) = 68.2$, $(1024) = 89.8$, $(\infty) = 371$; m. p. 130° – 131° ; **567**, **1058**.

Diphenyl-cyclobutadiene-dicarboxylic acid see **Phenylnaphthalene-dicarboxylic acid**.

Diphenyl-dicarboxylic acid see **Diphenic acid**.

Diphenyl-dichloro-methane. (Benzophenone chloride).



In SO_2 ; b. p. 186° @ 26 mm; **669**, **1676**.

N,N'-Diphenyl-endanilodihydro triazole. (Nitron). $C_{20}H_{16}N_4$.

B.Benzyl chloride. - B.MeI at 25° , $\Lambda(272)=85$; m. p. 213° ; **314**.

Diphenylene-glycollic acid. (9-Fluoreno-9-carboxylic acid).



$k_A \times 10^3$ [at 25°]=1.0.

$\mu(128.5)=104.8$, $(1028)=217.5$, $(\infty)=[356]$; **1134**.

Diphenyl-glutaric acid. (*sym.*-acid). $C_{17}H_{14}O_4 = CH_3(CHPh.CO_2H)_2$.

$k_A \times 10^4$ at $25^\circ=1.48$; m. p. 164° .

$\mu(319.6)=67.3$, $(1278.4)=120.5$, $(\infty)=345$; **2018**.

Diphenyl-glycollic acid see **Benzilic acid**.

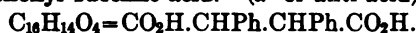
Diphenyl iodonium hydroxide. $C_{12}H_{11}OI = Ph_2I.OH$.

At 25° , $\Lambda(32)=186.2$, $(128)=191.2$.

B.Cl at 25° , $\Lambda(32)=81.9$, $(1024)=92.9$; **1687**. In NH_3 ; **604**. - B.I in NH_3 , qual.; **606**. - B. NO_2 ; **1687**.

Diphenyl-ketoxime see **Benzophenone oxime**.

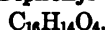
***sym.*-Diphenyl-succinic acid.** (α - or anti-acid).



$k_A \times 10^4$ at $25^\circ=2.6$; increases on diln.; m. p. 183° and 220° .

$\mu(92)=49.6$, $(736)=127.1$, $(\infty)=350$; **1838**.

β -(*para*)Diphenyl-succinic acid. (β -Bibenzylidicarboxylic acid).



$k_A \times 10^4$ at $25^\circ=2$; extrapolated; m. p. 229° .

$\mu(2250)=177.3$, $(4500)=220.8$, $(\infty)=350$; **1838**.

Diphenyl-thio urea see **Thiocarbanilide**.

Diphenyl-tolylamidine see **Phenyl-tolylbenzenylamidine**.

1,2-Diphenyl-3-p-tolyl-hydroxy-amidine.



B.HCl at 25° , $\Lambda(512)=144.5$, $(1024)=171.5$; m. p. 186° ; **1093**.

$\beta\gamma$ -Diphenyl-vinylacetic acid. $C_{16}H_{14}O_2 = PhCH:CPh.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ=5.6$; diminishes on diln.; m. p. 172° - 173° .

$\Lambda(512)=152.4$, $(1024)=181.6$, $(\infty)=371$; **567**, **1058**.

Dipiperonal-acetone. $C_{19}H_{14}O_5$.

Comparative strength (colorim.); m. p. 87° [? a typographical error for 187°]; **1663**.

Dipiperonal-cyclopentanone. $C_{21}H_{16}O_5$.

Comparative strength (colorim.); m. p. 252° ; **1663**.

Dipropyl-amine. $C_6H_{15}N = Pr_2NH$.

$k_B \times 10^3$ at $25^\circ=1.02$ aq.; about 16% too high.

$\Lambda(32)=33.1$, $(256)=77.6$, $(\infty)=197$; **271**.

In NH_3 , qual.; **606**.

B.HCl at 25° , $\Lambda(32)=86.1$, $(1024)=97.9$; **270**.

Di-iso-propyl-amine. $C_6H_{15}N$.

In Me alc. at 25° , $\Lambda(31.8)=2.3$, $(254.1)=12.0$; b. p. 84° @ 757 mm.

B.Hydrate in Me alc.; **335**.

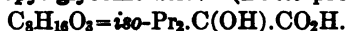
Dipropyl-aniline. $C_{12}H_{19}N = Ph.NPr_3$.

$k_B \times 10^{10}$ at 25° is at least 3 (solub.); too insol. to get a constant; 660, 957.

Di-iso-propylene-succinic acid.

$k_A \times 10^4 = 1.4$; diminishes on diln.

$\mu(128) = 49.8$, $(1024) = 111.9$, $(\infty) = 399.3$; m. p. 231° ; 440.

Di-iso-propyl-glycollic acid. (Di-iso-propyl-oxalic acid).

$k_A \times 10^4$ at $25^\circ = 1.27$; diminishes on diln.; m. p. 111° .

$\mu(32.5) = 22.0$, $(1040) = 106.2$, $(\infty) = 350$; 1704.

Dipropyl-malonic acid. $C_9H_{16}O_4 = Pr_2C(CO_2H)_2$.

$k_A \times 10^2$ at $18^\circ = 1.2$ (colorim.); 1563. At $25^\circ = 1.12$; diminishes on diln.; m. p. 156° ; 1638, 1667.

Second $k_A \times 10^8 = 5$ (inversion); 1638.

At 25° , $\mu(64) = 196.2$, $(1024) = 320.0$, $(\infty) = 350$; 1638.

Di-iso-propyl-oxalic acid see **Di-iso-propyl-glycollic acid.****2,6-Dipropyl-pimelic acid.** $C_{13}H_{24}O_4 = CH_2(CH_2.CHP_r.CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 3.0$; m. p. 95° – 96° ; 1412, 1859.

$\mu(1114.0) = 60.5$, $(2228.0) = 81.9$, $(\infty) = 350$; 1859.

2,6-Di-iso-propyl-pimelic acid. $C_{13}H_{24}O_4$.

$k_A \times 10^5$ at $25^\circ = 3.2$; m. p. 96° – 98° ; 1412, 1859.

$\mu(237.0) = 29.2$, $(948.0) = 56.0$, $(\infty) = 350$; 1859.

cis-sym.-Dipropyl-succinic acid. $C_{10}H_{18}O_4 = CO_2H.CHPr.CHPr.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 4.9$; diminishes on diln.; m. p. 119° – 121° .

$\mu(128) = 77.4$, $(1024) = 173.5$, $(\infty) = [351]$; 235.

trans-sym.-Dipropyl-succinic acid. $C_{10}H_{18}O_4$.

$k_A \times 10^4$ at $25^\circ = 2.5$; diminishes on diln.

$\mu(256) = 78.8$, $(1024) = 144.4$, $(\infty) = [351]$; m. p. 182° – 183° ; 235.

cis-sym.-Di-iso-propyl-succinic acid.

$k_A \times 10^3$ at $25^\circ = 2.4$; diminishes on diln.; m. p. 171° ; 235. = at least 3.0; diminishes on diln; m. p. 180° , (varies with manner of heating); 61, 1418.

$\mu(128) = 146.8$, $(1024) = 262.4$, $(\infty) = [351]$; 235.

cis-sym.-Di-iso-propyl-succinic acid mono methyl ester.

$k_A \times 10^4$ at $25^\circ = 1.15$; increases on diln.

$\mu(238) = 52.9$, $(952) = 98.3$, $(\infty) = [350]$; 235.

trans-sym.-Di-iso-propyl-succinic acid. $C_{10}H_{18}O_4$.

$k_A \times 10^4$ at $25^\circ = 1.08$; m. p. 226° .

$\mu(256) = 53.7$, $(1024) = 98.9$, $(\infty) = [351]$; 235.

trans-sym.-Di-*iso*-propyl-succinic acid mono methyl ester. $C_{11}H_{20}O_4$.

$k_A \times 10^5$ at $25^\circ = 6.4$; diminishes on diln.

$\mu(380) = 50.4$, $(1520) = 91.4$, $(\infty) = [350]$; **235**.

$\alpha\gamma$ -Di-*iso*-propyl-tricarballic acid.

$C_{12}H_{20}O_6 = CO_2H.CH\text{-}iso\text{-}Pr.CH(CO_2H).CH\text{-}iso\text{-}Pr.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.93$; m. p. 173° .

$\mu(171.5) = 151.6$, $(1372.0) = 270.7$, $(\infty) = [351]$; **237**.

$\alpha\gamma$ -Di-*iso*-propyl-tricarballic acid. $C_{12}H_{20}O_6$.

$k_A \times 10^5$ at $25^\circ = 1.63$; increases on diln.; m. p. 156° .

$\mu(95.9) = 113.7$, $(767.2) = 230.0$, $(\infty) = [351]$; **237**.

3,2'-Dipyridyl-3'-carboxylic acid. $C_{11}H_8O_2N_2 = C_5H_4N.CO_2H.N.C_5H_4N.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 2$; increases on diln.

$\mu(64) = 10.2$, $(1024) = 46.8$, $(\infty) = 350$; **1372**.

3,2'-Dipyridyl-2,3'-dicarboxylic acid.

$C_{12}H_8O_4N_2 = CO_2H.C_5H_4N.CO_2H.N.C_5H_4N.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 3.2$; increases, then diminishes on diln.

$\mu(128) = 63.1$, $(1024) = 150.9$, $(\infty) = 350$; **1372**.

Distyryl-dichloro-methane see Dicinnameryl-dichloro-methane.

Dithio-carbamine glycollic acid. $C_3H_5O_2NS_2 = NH_2CS.CHSH.CO_2H$.

$k_A \times 10^4$ is about 5 (catal., and cond.); unstable in aq.; m. p. $136^\circ\text{--}137^\circ$.

$\mu(32) = 46.0$, $(512) = 142.2$, $(\infty) = 382$; **854**.

Dithio-carbamine glycollic acid anhydride see Rhodanin.

Dithio-carbondiglycollic acid. (Carbonyldi-thioglycollic acid. Dithiolcarboxyacetic acid). $C_5H_8O_5S_2 = (CO_2H.CHSH)_2.CO$.

$k_A \times 10^4$ [at 25°] = 1.56; increases on diln.

$\mu(32.2) = 75.5$, $(1085) = 301.1$, $(\infty) = 378$; m. p. 156° ; **853**.

Dithio-diglycollic acid see Di-thioglycollic acid.

α -Dithio-dilactylic acid. $C_6H_{10}O_4S_2 = CO_2H.CHMe.S_2.CHMe.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 9$.

$\mu(32) = 55.2$, $(1024) = 216.8$, $(\infty) = 356$; **1133**.

β -Dithio-dilactylic acid. $C_6H_{10}O_4S_2 = CO_2H.(CH_2)_2.S_2.(CH_2)_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 9$; diminishes on diln.

$\mu(256) = 52.2$, $(1024) = 91$, $(\infty) = 356$; **1133**.

Di-thioglycollic acid. (Dithio-diglycollic acid).

$C_4H_8O_4S_2 = CO_2H.CH_2.S_2.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 6.8$; increases on diln.; **1370**.

Second $k_A \times 10^5 = 5.2$ (cond.); **1911**.

At 25° , $\mu(32) = 49.3$, $(1024) = 215.6$, $(\infty) = 358$; **1370**.

Dithiolcarboxyacetic acid see Dithio-carbonglycollic acid.

norm.-Dodecane-dicarboxylic acid. $C_{14}H_{28}O_4 = CO_2H.(CH_2)_{12}.CO_2H$.

Too insol. in aq. to measure; m. p. 123° ; **279**.

Dulcitol. $C_6H_{14}O_6 = C_6H_5(OH)_6$.

In NH_3 , qual.; 606.

Cond. alone and with boric acid; 1180.

Durenecarboxylic acid see 2,3,5,6-Tetramethyl-benzoic acid.

iso-Durenecarboxylic acid see 2,3,4,6-Tetramethyl-benzoic acid.

Durylic acid see 2,4,5-Trimethyl-benzoic acid.

iso-Durylic acid see 2,4,6-Trimethyl-benzoic acid.

E.

Ecgonine. $C_8H_{15}O_3N$.

$k_B \times 10^{11}$ at 14° is between 0.2 and 8 (colorim.); 1778.

rac.-Ecgoninic acid. $C_7H_{11}O_3N$.

$k_A \times 10^8$ at $25^\circ = 9.5$; increases on diln.; m. p. $93^\circ - 94^\circ$. $\Delta(71.2) = 27.6$, $(688.9) = 84.6$, $(\infty) = 375$; 1978.

Edestin. [The references to this are incomplete.]

Concentration of H ions; 1511b.

Egg albumin see Albumin.

Elder see *Sambucus nigra*.

Emetine. $C_{20}H_{40}O_5N_2$. Also given as $C_{20}H_{44}O_4N_2$ and $C_{15}H_{22}O_3N$.

$k_B \times 10^8$ at $15^\circ = 1.98$ (hydrol.); 1779.

Enteric see Intestinal.

Eosin see Tetrabromo-fluorescein.

Epichlorohydrin. C_2H_5OCl .

$\alpha \times 10^8$ at $0^\circ = 3.9$. At $25^\circ = 5.2$.

Cond. as solvent of salts of amines; 1844, 1851.

Erica see Erika.

Erika B. A salt of Methylbenzenyl-amino-thio-xyleneol-azo- α -naphthol-disulphonic acid.

$C_{22}H_{15}O_7N_3S_2K_2 = C_{16}H_{14}NS.N_2.C_{10}H_4(OH)(SO_3K)_2$.

At 18° , $\mu(400) = 202.0$, $(1600) = 229.1$. At 90° , $\mu(400) = 539.6$, $(1600) = 590.4$. Cond. with KCl; 976a.

Erythran phosphoric acid see Phosphoric acid erythran ester.

Erythrite see Erythrol.

Erythrol. (Erythrite). $C_4H_{10}O_4 = C_4H_6(OH)_4$.

Cond. in aq. soln. is very small; 944, 1181.

In NH_3 , qual.; 606.

Cond. with boric acid; 944, 1181.

Erythronitrolic acid see Ethylnitrolic acid; salts.

Ethenylglycollic acid. (α -Hydroxy-butenic acid. Vinylglycollic acid). $C_4H_6O_3 = CH_2:CH.CHOH.CO_2H$.

$k_A \times 10^4 = 5$; diminishes on diln.; m. p. 33° and 40° ; 300, 1633.

$\Delta(32) = 42$, $(1024) = 169.2$, $(\infty) = 360.6$; 1633.

Na.A, $\Delta(32) = 71.4$, $(1024) = 83.7$; 1633.

Ethenyl-tricarboxylic acid. $C_6H_4O_6 = CO_2H.CH_2.CH(CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 3.2$; m. p. 150° . $\mu(32) = 96.5$, $(1024) = 290$, $(\infty) = 354$; **1839**.

Ether bromide see **Ethyl ether**.

Ethoxy-acetic acid. (Ethylglycollic acid. Glycollic acid ethyl ether).

$C_4H_8O_3 = EtO.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.34$; diminishes on diln.; aq. used for soln. was not pure. $\Lambda(32) = 29.5$, $(1024) = 134$, $(\infty) = 356$; **1370**.

Na.A at 25° , $\Lambda(32) = 67.2$, $(1024) = 78.6$; **1367**.

o-Ethoxy-benzoic acid. (Ethyl-o-hydroxy-benzoic acid).

$C_9H_{10}O_3 = EtO.C_6H_4.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 7.2$; diminishes on diln.

$\Lambda(128) = 32.1$, $(512) = 60.8$, $(\infty) = 352$; **1429**.

m-Ethoxy-benzoic acid. (Ethyl-m-hydroxy-benzoic acid). $C_9H_{10}O_3$.

$k_A \times 10^5$ at $25^\circ = 9.2$; diminishes on diln.

$\Lambda(512) = 68.4$, $(1024) = 92$, $(\infty) = 352$; **1429**.

p-Ethoxy-benzoic acid. (Ethyl-p-hydroxy-benzoic acid). $C_9H_{10}O_3$.

$k_A \times 10^5$ at $25^\circ = 5.1$; diminishes on diln.

$\Lambda(2048) = 97.0$, $(\infty) = 352$; **1429**.

2-Ethoxy-5-chlorobenzoic acid. (Chlorosalicylic acid ethyl ether).

$C_9H_9O_3Cl = EtO.C_6H_4(Cl).CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.33$; m. p. 118° .

$\Lambda(893) = 102.7$, $(1786) = 135$, $(\infty) = 351$; **404**.

Ethoxy phosphorus chloride. $[C_2H_5OC_2P?]$.

In HCl, good cond.; **1897**.

α -Ethoxy-propionic acid. (Ethyl-lactic acid. Lactic acid ethyl ether).

$C_5H_{10}O_3 = MeCH(OEt).CO_2H$.

K.A. - Na.A at 25° , $\Lambda(32) = 64.2$, $(1024) = 75.1$; **1367**.

3-Ethoxy-p-toluic acid. (Ethyl-m-homo-o-hydroxy-benzoic acid).

$C_{10}H_{12}O_3 = Me.C_6H_3(OEt).CO_2H$. [$CO_2H = 4$; $Me = 1$.]

$k_A \times 10^5$ at $25^\circ = 3.5$; diminishes on diln. $\Lambda(512) = 44.3$, $(1024) = 60.1$, $(\infty) = 352$; m. p. 79.5° ; **1429**.

Ethylacetoacetic acid ethyl ester. $C_8H_{14}O_3 = MeCO.CHEt.CO_2Et$.

$k_A \times 10^{13}$ at $25^\circ = 9$ (sapon.); **666**; is about 0.3 (sapon.); **1594**.

At 25° , $\Lambda(256) = 0.07$; **1823**.

α -Ethyl- β -acetylpropionic acid. (Ethyl-laevulinic acid).

$C_7H_{12}O_3 = MeCO.CH_2.CHEt.CO_2H$.

$k_A \times 10^5$ [probably at 25°] = 2.93; b. p. $170^\circ - 175^\circ$ @ 45 mm.; **202**.

α -Ethyladipic acid. $C_8H_{14}O_4 = CO_2H.(CH_2)_3.CHEt.CO_2H$.

$k_A \times 10^5$ at $24.2^\circ = 4.15$; m. p. 48° .

$\mu(47.2) = 15.1$, $(755.2) = 57.6$, $(\infty) = 351$; **1240**.

Ethyl alcohol. $C_2H_5O = Et.OH$.

$\alpha \times 10^7$ at $-9^\circ = 0.8$; **1853a**. At $0^\circ = 1.487$; **1843**, **1844**, **1419**; = 2; **920**. - **425**, **916**, **918**, **922**, **1472**, **1590a**, **1651**, **1766**. At 14.6° ;

787. At 15°; 456, 597, 1419, 1421, 1472. At 16°; 1419. At 18°=1; 491; =1.53; 647; =3; 1724; - 362, 366, 391, 478, 783, 956, 986, 1316, 1420, 1421, 1534, 1791, 1800, 1807, 1970. At 19°; 418, 1021. At 20°=1.11; 1766; - 1590a. At 24°; 1010. At 25° is less than 0.2; 1388.=0.75; 1766.=1.03; 1844; - 18, 347, 656a, 754, 764, 782, 904, 908, 912, 917, 918, 922, 941, 1423a, 1434a, 1569, 1580, 1592, 1649, 1815, 1843, 1849, 1853a, 1884, 1903a, 1971. [So-called "anhydrous" alcohol carefully prepared has $\alpha=2 \times 10^{-6}$ or less. In 1766 it is stated that it is easy to prepare alcohol of $\alpha=2 \times 10^{-7}$; and that its cond. is less affected by exposure to air than that of aq. See especially 1766, 1843.] At 30°=1.12; 1766, 1472; - 1420, 1421. At 35°=1.38; 1766. At 45°=6.7; 1434a; 1472. At 50°=1.85 and 4.5; 1766. At 60°; 1472. At 70°; 1800. T not stated; 263, 580, 816, 1098, 1344, 1556, 1620.

Cond. of dil. soln.; 305, 455, 456, 1534, 1582, 1627.

In HBr; 29, 30; good cond.; 1897; no cond.; 147a. In HCl, μ ; 147a. In HCN, no cond.; 943. In HI, μ ; 147a. In H₂S, no cond.; 147a. In NH₃, qual.; 606. In Cl, no cond.; in Cl with HCl, moderate cond.; 887.

Cond. with KOH; 597. With NaOH; 748, 1035, 1724. With inorg. salts; 34, 580, 597, 748, 904, 905, 906, 912, 916, 918, 920, 922, 941, 1388, 1534, 1582, 1592, 1844, 1994. With organic compounds; 45, 263, 816, 922, 1021, 1388, 1421, 1423a, 1434a, 1569, 1620, 1724, 1800, 1807, 1844, 1853a, 1903a. - Qual.; 1311. With very small amounts of aq.; 456, 491, 597, 1766, 1843. Effect of radium on cond.; 2031. Cond. of thin layer; 301. Under pressure; 1509, 1590a. As solvent; 16, 18, 20, (34), 75, 82, (90), 325, (327), 334, 344, (347), 391, 418, 425, 438, 480, 491, 513, 532, (580), 647, 654, 656a, 667, (697), (711), 754, 764, 777, 782, (783), 787, 788, 789, 833, (876), (912), (915), (916), (918), (920), 922, 923, 932, (1015), 1021, 1066, 1071, 1185, (1280), 1298, 1311, 1316, 1321, 1421, 1423a, (1432), 1434a, 1452, 1470, 1508, 1526, 1530, (1534), (1541), 1569, 1579, (1582), 1590a, 1620, 1622, 1627, 1649, (1651), (1653), 1654, (1681), 1718, 1724, 1763, (1766), 1791, (1794), 1797, 1807, 1815, (1818), 1820, 1844, 1853a, 1884, 1886, 1903a, 1904, 1970, 1971, (1994), 2029, (2031). Dielectric constant; 445, 1509. Relative basicity in organic solvents, (colorim.); 1051.

Na.A; 344, 1452, 1724, 1815. With menthone; 1763.

p-sym.-Ethylallylsuccinic acid.



- $k_A \times 10^4$ at $25^\circ = 2.69$; diminishes on diln.; m. p. 155° – 156° ; **1838**;
m. p. 163° – 166° ; **826**.
Second $k_A \times 10^6 = 2.3$ (inversion); **1638**.
At 25° , $\mu(32) = 31$, $(1024) = 135.8$, $(\infty) = 350$; **1838**.
meso-sym.-Ethylallylsuccinic acid. $C_9H_{14}O_4$.
 $k_A \times 10^4$ at $25^\circ = 3.59$; diminishes on diln.; m. p. 110° – 115° ; **826**,
1838.
 $\mu(32) = 35.7$, $(512) = 116.3$, $(\infty) = 350$; **1838**.
Ethyl-amine. $C_2H_7N = Et.NH_2$.
 $\alpha \times 10^7$ at 0° is about 4; **1612**.
 $k_B \times 10^4$ at $25^\circ = 5.6$ aq.; about 16% too high; **271**.
At 25° , $\Delta(32) = 27.0$, $(256) = 65.6$, $(\infty) = 214$; **271**.
Cond. as solvent of inorg. compounds; **1612**.
B.HCl at 25° , $\Delta(32) = 102.9$, $(1024) = 114.3$; **270**. In SO_2 ; **1855**.
In NH_3 ; **610**. – Complex salts; **1750**, **1751**, **1757**.
Ethylaminosuccinic acid. $C_8H_{11}O_4N = CO_2H.CHNH_2.CHEt.CO_2H$.
 $k_A \times 10^4 = 3.47$; m. p. 132° .
 $\mu(32) = 35.3$, $(1024) = 153.2$, $(\infty) = 352$; **1158**.
Ethylaniline. $C_8H_{11}N = Ph.NHEt$.
 $k_B \times 10^{10}$ at $19^\circ = 4.17$ (colorim.); **1777**.
In benzene, alone and with picric acid, no cond.; **1802**.
B.HCl at 25° , $\Delta(64) = 90.4$, $(256) = 95.1$; **270**.
Ethylaniline-3-sulphonic acid. (Ethyl metanilic acid).
 $C_8H_{11}O_4NS = EtNH.C_6H_4.SO_3H$. [$EtNH = 1$; $SO_3H = 3$.]
 $k_A \times 10^4 = 1.59$; dec. 294° . $\Delta(32) = 24.6$, $(1024) = 116.3$, $(\infty) = 356.5$.
Na.A, $\Delta(32) = 67.8$, $(1024) = 78.5$; **645**.
Ethylaniline-4-sulphonic acid. (Ethyl sulphanilic acid). $C_8H_{11}O_4NS$.
 $k_A \times 10^4 = 1.25$; dec. 258° . $\Delta(32) = 21.7$, $(1024) = 107.0$, $(\infty) = 355.5$.
Na.A, $\Delta(32) = 67.8$, $(1024) = 76.6$; **645**.
5-Ethylbarbituric acid. $C_8H_8O_3N_2$.
 $k_A \times 10^6$ at $25^\circ = 3.83$. $\mu(64) = 18.2$; **1996**.
Ethyl benzene. C_8H_{10} .
In NH_3 , qual.; **606**.
o-Ethylbenzoic acid. $C_9H_{10}O_2 = Et.C_6H_4.CO_2H$.
 $k_A \times 10^4$ at $25^\circ = 1.7$. $\Delta(256) = 66.5$, $(\infty) = 354$; **1418**.
Ethylbenzyl ether. $C_9H_{12}O$.
In NH_3 , qual.; **606**.
Ethylbenzylmalonic acid. $C_{12}H_{14}O_4 = (PhCH_2)(Et)C(CO_2H)_2$.
 $k_A \times 10^2$ at $25^\circ = 1.46$; diminishes on diln.
 $\mu(32) = 171.6$, $(1024) = 332$, $(\infty) = 352$; **1838**.
meso-Ethylbenzylsuccinic acid.
 $C_{12}H_{16}O_4 = CO_2H.CHEt.CH(C_6H_5).CO_2H$.

$k_A \times 10^4$ at $25^\circ = 4.14$; increases, then diminishes on diln.; m. p. 122° ; **201, 1838.**

$\mu(32) = 38.0$, $(512) = 126.9$, $(\infty) = 350$; **1838.**

para-Ethylbenzylsuccinic acid. $C_{13}H_{16}O_4$.

$k_A \times 10^4$ at $25^\circ = 2.62$; increases, then diminishes on diln.; m. p. 154° ; **200, 1838.**

$\mu(64) = 42.4$, $(1024) = 137.4$, $(\infty) = 350$; **1838.**

Ethylbenzyl sulphide. (Benzyl mercaptan ethyl ether).

$C_9H_{12}S = C_7H_7 \cdot SET$.

In SO_2 ; **1842.**

Ethyl bromide. C_2H_5Br .

$\alpha \times 10^8$ at 25° is less than 2; b. p. $37.4^\circ - 41^\circ$ @ 732.4 mm.; **1388, 1437.**

In NH_3 , qual.; **606.**

Compound with $AlBr_3$ and $AlCl_3$; **1437, 1893.**

Cond. as solvent of inorg. and organic compounds; **1388, 1435, 1437.**

α -Ethylbromosuccinic acid. (N acid).

$C_6H_9O_4Br = CO_2H \cdot CHBr \cdot CHEt \cdot CO_2H$.

$k_A \times 10^5$ at $25^\circ = 4.23$; diminishes on diln.; m. p. 114° ; **1838.**

Second $k_A \times 10^5 = 3.6$; **1911.**

At 25° , $\mu(32) = 109.0$, $(1024) = 311$, $(\infty) = 355$; **1838.**

β -Ethylbromosuccinic acid. (H acid).

$C_6H_9O_4Br = CO_2H \cdot CHBr \cdot CHEt \cdot CO_2H$.

$k_A \times 10^5$ at $25^\circ = 5.41$; increases on diln.; m. p. 192° ; **1838.**

Second $k_A \times 10^5 = 6.4$; **1911.**

At 25° , $\mu(32) = 120.1$, $(1024) = 330$, $(\infty) = 355$; **1838.**

Ethylbrucinium chloride. (Brucine ethochloride).

$C_{26}H_{31}O_4N_2Cl = B \cdot EtCl$.

At 25° , $\Lambda(32) = 75.3$, $(1024) = 90.7$; **270.**

Ethyl chloride. C_2H_5Cl .

α of commercial ethyl chloride; **534.**

Cond. with $HgCl_2$; **534.** With allyl thiocarbimide, no cond.; **1223.**

Ethylcrotonic acid see α -Methyl- β -pentenoic acid.

Ethylcyclopentane-carboxylic acid see Ethylpentamethylene-carboxylic acid.

Ethyl- $\alpha\Delta$ -dithio-carbonglycollic acid.

$C_5H_8O_3S_2 = EtS \cdot CS \cdot CHOH \cdot CO_2H$.

$k_A \times 10^3$ at $25^\circ = 2.12$; m. p. $77^\circ - 78^\circ$.

$\mu(39.8) = 95.5$, $(627.2) = 257.8$, $(\infty) = 378$; **853.**

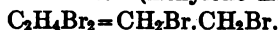
Ethyl- $\beta\Delta$ -dithio-carbonglycollic acid. (Ethylsulphothiocabonglycollic acid. Ethylxanthoacetic acid. Ethylxanthogenacetic acid). $C_5H_8O_3S_2 = EtO \cdot CS \cdot CHSH \cdot CO_2H$.

$k_A \times 10^4$ at $25^\circ = 6.5$ aq.; m. p. $57.5^\circ - 58^\circ$.

$\mu(31.8) = 50.6$, $(1071) = 210.1$, $(\infty) = 378$; **852**.

Ethylene acetic acid see **Trimethylene-carboxylic acid**.

Ethylene bromide. (Ethylene dibromide).



α at $13^\circ = 5.5 \times 10^{-10}$ [?]; **1477**. At 25° is less than 2×10^{-8} ; b. p. $128.5^\circ - 128.7^\circ$ @ 741.2 mm.; **1388**.

In HBr and H_2S , no cond.; **1897**. In NH_3 , qual.; **606**. In $MeNH_2$, good cond.; **637**.

Cond. with $AgNO_3$ and organic compounds; **1388**.

Ethylene chloride. (Dichloro-ethane). $C_2H_4Cl_2 = CH_2Cl.CH_2Cl$.

As solvent; **840**.

Ethylene chlorohydrin see **Glycol chlorohydrin**.

Ethylene cyanide. (Succinic nitrile). $C_4H_4N_2 = CN.CH_2.CH_2.CN$.

$\alpha \times 10^6$ at $25^\circ = 0.165$. At $60^\circ = 1.50$. At $63^\circ = 1.58$. At $72^\circ = 1.78$; b. p. $88^\circ - 90^\circ$ @ 48-52 mm.; **1844**, **1843**.

In HCN, no cond.; **943**.

Cond. as solvent of NEt_4I ; **1844**.

Ethylene diamine. $C_2H_8N_2 = NH_2.CH_2.CH_2.NH_2$.

$k_B \times 10^5$ at $25^\circ = 8.5$ aq.; about 16% too high; diminishes on diln.; **271**.

Second $k_B \times 10^7$ at 16° is about 6 (colorim.); **1775**.

At 25° , $\Lambda(32) = 10.8$, $(256) = 28.1$, $(\infty) = 210$; **271**. - **1354**.

B.HCl at 25° , $\Lambda(32) = 98.3$, $(1024) = 143.2$. - B.2HCl at 25° , $\Lambda(32) = 118.6$, $(1024) = 140.0$; **270**. In aq. and in Me alc.; **2029**. - Complex salts; **886**, **1415**, **1417**, **1752**, **1755**, **1946**, **1948**, **1949**.

Ethylene dibromide see **Ethylene bromide**.

Ethylene-ethyl amine see **Methylenecyclopropane amine**.

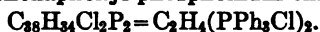
Ethylene glycol. (Glycol). $C_2H_6O_2 = OH.CH_2.CH_2.OH$.

$\alpha \times 10^7$ at $0^\circ = 2.37$; **1844**. At $25^\circ = 3.03$; **1844**, **1853a**.

In H_2S , little cond.; **1897**. In NH_3 , qual.; **606**.

Cond. with borax; **944**. As solvent of NEt_4I ; **1844**, **1853a**.

Ethylenehexaphenyl phosphonium chloride.



At 25° , $\Lambda(32) = 80.4$, $(1024) = 98.0$; **270**.

Ethylene oxide. C_2H_4O .

Cond. in aq. soln. very small; **273**.

Cond. with HCl, showing change to glycol chlorohydrin; **760**.

Cond. with acids, very small; **1857**.

Ethylene urea. $C_2H_4ON_2$.

At 25° , $\mu(32) = 0.32$, $(256) = 0.40$; **1748**.

Ethylethenyltricarboxylic acid see **Butenyltricarboxylic acid**.

Ethyl ether. (Diethyl ether. Ethyl oxide). $C_4H_{10}O = Et.O.Et.$

α is so small that no approximately accurate figures are possible.

It is evidently less than 10^{-8} . Attempts have been made to measure it at temperatures from 0° to about the critical point. See; 305, 362, 366, 535, 816, 986, 1010, 1098, 1316, 1344, 1421, 1556, 1596, 1842, 1843. Near critical temperature; and dielectric constant; 534, 536; qual.; 133.

At 25° , $\Lambda(2) = 0.065$; 1843.

In HBr; 1646. Qual.; 1897. In HCl; 534, 1646. Qual.; 887, 1897. In HCN, no cond.; 943. In HI; 33, 1646. Qual.; 1897. In H_2S , no cond.; 1897. In H_2SO_4 ; 750. In Cl, no cond.; addition of HCl gives a conducting soln.; 887. In NH_3 , qual.; 606.

Cond. with HCl; 534. With inorg. salts; 748. With Et alc.; 816, 1421. With Br; 1447. With $AlBr_3$; 1445. With organic acids; 45. As influenced by radium; 2031. Effect of Röntgen rays on cond. qual.; 1805. As solvent; 20, 289, 360, 366, (711), 1071, 1421, 1580, 1797.

Relative basicity in organic solvents (colorim.); 1051.

Ethyl ether bromide. $C_4H_{10}OBr_2$.

Cond.; 1447. [An addition product?]

Ethylfumaric acid. (Methylmesaconic acid).

$C_6H_8O_4 = CO_2H.CH:CEt.CO_2H.$

$k_A \times 10^4$ at $25^\circ = 9.4$; m. p. $193^\circ - 195^\circ$; 191, 1823, 1831, 1838.

$\mu(32) = 56.2$, (256) = 137, $(\infty) = 354$; 1823, 1831, 1838.

α -Ethylglutaric acid. $C_7H_{12}O_4 = CO_2H.(CH_2)_2.CHEt.CO_2H.$

$k_A \times 10^5$ at $24.2^\circ = 5.6$; m. p. $60^\circ - 61^\circ$; 1240. = 5.9; increases on diln.; 61, 1418.

$\mu(44.6) = 16.9$, (713.6) = 63.2, $(\infty) = 352$; 1240.

Ethylglycollic acid see **Ethoxy-acetic acid.**

μ -Ethyl glyoxaline. $C_6H_8N_2$.

$k_B \times 10^6$ [probably at 25°] = 1.0; m. p. 89° .

$\Lambda(32) = 1.2$, (1024) = 7.2, $(\infty) = 222.7$.

B. HNO_3 [probably at 25°], $\Lambda(32) = 89.4$, (1024) = 102.2; 428.

N-Ethyl glyoxaline. $C_6H_8N_2$.

$k_B \times 10^7$ [probably at 25°] = 3; diminishes on diln.; b. p. 206° .

$\Lambda(32) = 0.7$, (1024) = 3.1, $(\infty) = 222.0$.

B.Picrate [probably at 25°], $\Lambda(128) = 61.1$, (1024) = 69.5; 428.

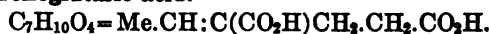
Ethyl-m-homo-o-hydroxy benzoic acid see **Ethoxy-p-toluic acid.**

Ethyl-hydroxy-benzoic acid see **Ethoxy-benzoic acid.**

Ethylidene chloride. (1,1-Dichloro-ethane). $C_2H_4Cl_2 = Me.CHCl_2$.

In NH_3 , qual.; 606.

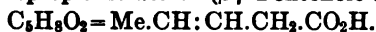
Cond. with Cu oleate; and as solvent; 1569.

α -Ethylideneglutaric acid.

$k_A \times 10^5$ at $25^\circ = 3.2$; m. p. 152° ; **568**.

$\Lambda(32) = 11.9$, $(1024) = 60.9$, $(\infty) = [380]$; **1291**.

2Na.A at 25° , $\Lambda(32) = 82.3$, $(1024) = 98.7$; **1291**, **568**.

 α -Ethylidene- β -methylglutaric acid see Dicrotonic acid.**Ethylidenepropionic acid. ($\beta\gamma$ -Pentenoic acid).**

$k_A \times 10^5$ at $25^\circ = 3.6$; diminishes on diln. $\Lambda(32) = 12.6$, $(1024) = 62.5$, $(\infty) = 380$.

Na.A at 25° , $\Lambda(1024-32) = 10-11$; **571**, **564**.

Ethylidenesuccinic acid see *iso*-Succinic acid.**Ethyl iodide. $\text{C}_2\text{H}_5\text{I}$.**

$\alpha \times 10^8$ at 25° is less than 2; b. p. $71^\circ-71.1^\circ$ @ 747 mm.; **1388**.

In HCN , no cond.; **943**. In NH_3 , qual.; **606**.

Cond. with Et_2S in alc.; **334**. With AgNO_3 and organic compounds; **1388**. With AlCl_3 ; **1893**.

Ethyl-*pseudo*-isatin- β -oxime. (Ethyl isatoxime). $\text{C}_{10}\text{H}_{10}\text{O}_2\text{N}_2$.

$k_A \times 10^8$ at 25° is about 2 (sapon.); **752** and **1150**.

Ethyl isatoxime see Ethyl-*pseudo*-isatin oxime.**Ethylitaconic acid. $\text{C}_7\text{H}_{10}\text{O}_4 = \text{Et.CH:C}(\text{CO}_2\text{H})\text{CH}_2\text{CO}_2\text{H}$.**

$k_A \times 10^5$ at $25^\circ = 3.6$; diminishes on diln. $\Lambda(32) = 12.6$, $(1024) = 58.9$, $(\infty) = 376$; m. p. $163^\circ-167^\circ$ with dec.; **571a**.

Ethyl-lactic acid see Ethoxy-propionic acid.**Ethyl-laevalinic acid see Ethyl-acetylpropionic acid.****Ethylmaleic acid. (Methylcitraconic acid).**

$k_A \times 10^3$ at $25^\circ = 2.4$; diminishes on diln. $\mu(32) = 85.3$, $(1024) = 263$, $(\infty) = 353$; m. p. $100^\circ-101^\circ$; **191**, **1838**. - **1823**, **1831**.

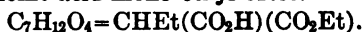
Ethylmaleinanilic acid see Methylcitraconanilic acid.**Ethylmalonic acid. (α -*iso*-Pyrotartaric acid).**

$k_A \times 10^3$ at $18^\circ = 1.3$ (colorim.); **1563**, **1781**. At $25^\circ = 1.27$; diminishes, then increases on diln.; m. p. $110^\circ-112^\circ$; **1838**, **1371**.

Second $k_A \times 10^7 = 5.4$ (inversion); **1638**, **1335**.

At 25° , $\mu(32) = 65.1$, $(1024) = 236$, $(\infty) = 356$; **1838**.

2Na.A at 25° , $\Lambda(32) = 78.6$, $(1024) = 95.3$; **270**.

Ethylmalonic acid mono ethyl ester.

$k_A \times 10^4$ at $25^\circ = 4.0$.

$\mu(33.8) = 39.5$, $(1080.0) = 167.9$, $(\infty) = 352$; **1859**.

1-Ethylmenthyl amine. $C_{12}H_{25}N = C_{10}H_{19}.NH.Et.$

B.HCl at 25° , $\Lambda(32)=79.9$, $(512)=92.2$, $(1024)=99.1$ (?).

- B.HNO₃. Also both salts in Me alc.; 2029.

Ethyl mercaptan. $C_2H_5S = Et.SH.$

α at 25° is extremely small.

Cond. as solvent of NEt_4I ; 1844.

Ethyl-mesaconic acid see **Propylfumaric acid.**

Ethyl metanilic acid see **Ethylaniline-3-sulphonic acid.**

Ethylmethyl- see **Methylethyl-**

Ethyl mustard oil see **Ethyl thiocarbimide.**

Ethyl nitrate see **Nitric acid ethyl ester.**

Ethylnitrolic acid. (Nitroacetaldehyde oxime. Nitroaldoxime).

$C_2H_4O_3N_2 = MeC(NO_2):N.OH.$

$k_A \times 10^9$ at $0^{\circ}=6$; m. p. 82° ; 752, 683, 684, 733.

At 0° , $\Lambda(32)=0.1$, $(\infty)=213$; 752.

In pyridine; 754.

On account of the small hydrolysis of the sodium salt at $v(32)$, Hantzsch considers this ethylnitrolic acid a pseudo acid, while the salt-forming acid would be stronger than acetic acid. The following salts are derived from the isomer giving colored salts=Erythronitrolic acid.

K.A at 0° , $\Lambda(32)=48.7$, $(1024)=59.6$. No acid potassium salt exists in aq. soln. - Pyridine.A, exists in aq. soln.; 684.

Ethyl-iso-nitrosoacetone see **iso-Nitrosomethylpropyl ketone.**

Ethyl oxide see **Ethyl ether.**

1-Ethylpentamethylene-2-carboxylic acid. (1-Ethylcyclopentane-2-carboxylic acid). $C_8H_{14}O_2.$

$k_A \times 10^5$ [at 25°]=1.11. $\Lambda(64.5)=9.3$, $(1032.3)=35.5$, $(\infty)=352$; 2026.

α -Ethyl- $\alpha\beta$ -pentenoic acid. $C_7H_{12}O_2 = MeCH_2.CH:CEt.CO_2H.$

$k_A \times 10^5$ at $25^{\circ}=2.2$; diminishes on diln.; b. p. 120° @ 12 mm.;

569, 570. $\Lambda(64)=14$, $(1024)=48.1$, $(\infty)=[376]$; 570.

α -Ethyl- $\beta\gamma$ -pentenoic acid. $C_7H_{12}O_2 = Me.CH:CH.CHEt.CO_2H.$

$k_A \times 10^5$ at $25^{\circ}=3.6$; diminishes on diln.; b. p. 116° @ 12 mm.;

569, 570. $\Lambda(32)=12.6$, $(1024)=61.4$, $(\infty)=376$; 570.

Ethylphenylethylenelactic acid see **Ethylphenylhydroxypropionic acid.**

α -Ethyl- β -phenyl- β -hydroxy-propionic acid. (α -Ethyl- β -phenylethylenelactic acid. Ethylphenyllactic acid).

$C_{11}H_{14}O_3 = PhCH(OH).CHEt(CO_2H).$

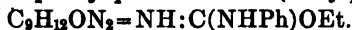
$k_A \times 10^5$ at $25^{\circ}=3.08$; increases, then diminishes on diln.; m. p. 111.5° - 112.5° . $\Lambda(29.7)=10.3$, $(950.4)=59.0$, $(\infty)=348$; 1704.

Ethylphenyl ketone. $C_9H_{10}O = Et.CO.Ph.$

In HBr, good cond.; in H₂S, no cond.; 1897.

Ethylphenyllactic acid see **Ethylphenylhydroxy-propionic acid.**

O-Ethyl-N-phenyl pseudo-urea. (Ethylphenyl iso-urea).



$k_B \times 10^7$ at $25^\circ = 5$; b. p. 138.5° – 139.5° @ 18 mm.; **285, 286.**

At 25° , $\mu(26.0) = 0.8$, $(833.1) = 5.4$, $(\infty) = 224.2$.

B.HCl at 25° , $\Lambda(32) = 89.0$, $(1024) = 101.4$; **286.**

Ethyl phosphoric acid see **Phosphoric acid mono ethyl ester.**

Ethyl- α -picolinium chloride. $\text{C}_8\text{H}_{12}\text{NCl} = \text{C}_6\text{H}_7.\text{NEtCl}.$

At 25° , $\Lambda(32) = 90.6$, $(1024) = 103.0$; **270.**

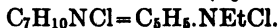
Ethylpropylmalonic acid. $\text{C}_8\text{H}_{14}\text{O}_4 = \text{CEtPr}(\text{CO}_2\text{H})_2.$

$k_A \times 10^8 = 8.9$; **1667.** [Misprinted as Methylpropyl- etc.]

Ethylpyridine. $\text{C}_7\text{H}_9\text{N} = \text{Et}.\text{C}_5\text{H}_4\text{N}.$

B.HCl at 25° , $\Lambda(64) = 96.1$, $(1024) = 102.2$; **270.**

Ethylpyridinium chloride. (Pyridine ethochloride or chloro-ethylate).



At 25° , $\Lambda(32) = 94.6$, $(1024) = 106.0$; **270.**

Ethylquinolinium tri-iodide. (Quinolinium ethoiodide diiodide).



α of molten salt; m. p. 43° – 45° ; **1578.**

Ethylstrychninium chloride. (Strychnine ethochloride).



At 25° , $\Lambda(32) = 77.8$, $(1024) = 91.5$; **270.**

Ethylsuccinic acid. $\text{C}_8\text{H}_{10}\text{O}_4 = \text{CO}_2\text{H}.\text{CHEt}.\text{CH}_2.\text{CO}_2\text{H}.$

$k_A \times 10^8$ at $25^\circ = 8.5$; m. p. 98° ; **1838, 175, 200.**

Second $k_A \times 10^8 = 1.3$ (inversion); **1638.**

At 25° , $\mu(32) = 17.9$, $(1024) = 90.1$, $(\infty) = 353$; **1838.**

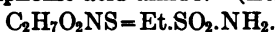
Ethyl sulphamide see **Ethyl sulphonic acid amide.**

Ethyl sulphanilic acid see **Ethylaniline-4-sulphonic acid.**

Ethyl sulphide see **Diethyl sulphide.**

Ethylsulphocyclic acid see **Ethyl sulphonic acid cyanoamide.**

Ethyl sulphonic acid amide. (Ethyl sulphamide).



At 25° , $\Lambda(32) = 5.0$, $(1024) = 20.2$.

Cond. with diethyl-amine; **1576.**

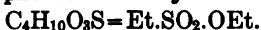
Ethyl sulphonic acid cyanoamide. (Ethylsulphocyclic acid).



$k_A \times 10^8$ at $25^\circ = 7.3$; diminishes on diln., from decomposition in soln.

$\mu(104.4) = 9.6$, $(835.2) = 22.6$, $(\infty) = 350$; **70.**

Ethyl sulphonic acid ethyl ester. (*asym.*-Diethyl sulphite).



$\alpha \times 10^7$ at $0^\circ = 3.00$. At $25^\circ = 4.96$; b. p. 93° @ 10 mm.

Cond. as solvent; **1844.**

Ethylsulphothiocarbonylcollic acid see **Ethyl- β -dithio-carbonylcollic acid.**

Ethyl sulphuric acid see Sulphuric acid mono ethyl ester.

Ethyl sulphurous acid see Sulphurous acid mono ethyl ester.

Ethyl thiocarbimide. (Ethyl mustard oil). $C_2H_5NS=CSNEt$.

$\alpha \times 10^7$ at $0^\circ = 0.873$; **1844**. At $25^\circ = 1.258$; b. p. $131^\circ - 131.5^\circ$ @ 760 mm.; **1844, 939, 1223, 1843**.

In NH_3 , qual.; **606**.

Cond. as solvent of organic compounds; **939, 1844**.

Ethyl thiocyanate see Thiocyanic acid ethyl ester.

Ethylthioglycollic acid. $C_4H_8O_2S = EtS.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.83$ aq.

$\Lambda(31.5) = 27.8$, $(503.4) = 99.1$, $(\infty) = 380$; **1465**.

Pt.2A, $v(40)$, cond. is of order of water; **1466**.

Ethylthio-phenyl- see Phenyl-ethylthio-

Ethyltricarballic acid.

$C_8H_{12}O_6 = CO_2H.CH_2.CH(CO_2H).CH_2Et(CO_2H)$.

$k_A \times 10^4$ at $25^\circ = 3.2$; m. p. $147^\circ - 148^\circ$; **1839, 67**.

$\mu(32) = 33.6$, $(1024) = 151$, $(\infty) = 341$; **1839**.

Ethyltriphenyl phosphonium chloride. $C_{20}H_{20}ClP = (Et)(Ph)_3PCl$.

At 25° , $\Lambda(32) = 79.6$, $(1024) = 90.6$; **270**.

Ethyltrithio-carbonglycollic acid. $C_8H_8O_2S_3 = EtS.CS.CHSH.CO_2H$.

$k_A \times 10^4$ [at 25°] = 8.2; m. p. $75.5^\circ - 76^\circ$.

$\mu(91.4) = 90.7$, $(724.8) = 202.5$, $(\infty) = 378$; **853**.

Ethyl iso-urea. $C_3H_8ON_2 = NH_2C(OEt):NH$.

$k_B \times 10^4$ at $25^\circ = 1.04$; b. p. 89° @ 10.5 mm.; **285, 286**.

$\Lambda(32) = 13.3$, $(256) = 34.9$, $(\infty) = 234.6$.

B.HCl at 25° , $\Lambda(32) = 99.2$, $(512) = 110.8$; m. p. $123^\circ - 124^\circ$; **286**.

Ethylxanthoacetic acid see Ethyl- $\beta\Delta$ -dithiocarbonglycollic acid.

Ethylxanthogenacetic acid see Ethyl- $\beta\Delta$ -dithiocarbonglycollic acid.

Ethyl xanthogenate see Xanthic acid ethyl ester,

Eucalyptole see Cineole.

Eugenol. (1-Allyl-4-hydroxy-3-methoxy-benzene).

$C_{10}H_{12}O_2 = CH_2:CH.CH_2.C_6H_3(OH)(OMe)$.

In NH_3 , qual.; **606**.

Cond. with NaOH and HCl; **1508**.

Euphorbia helioscopia. (Sun spurge). [The references to this are incomplete.]

Cond. of sap; **253**.

Eye. [The references to this are incomplete.]

Cond. of fluids of eye; **253**. Concentration of H and OH ions in aqueous and in vitreous humor; **587**. Cond. of crystalline lens; **259, 260**.

F.

Fencholenic acid. $C_{10}H_{16}O_2 = C_9H_{15}.CO_2H$.

$k_A \times 10^5$ at 18° is about 1; increases on diln.

$\Lambda(381) = 18.0$, (1933) = 44.3, $(\infty) = 317$; b. p. $260^\circ - 261^\circ$; **1899**.

[This acid has been split into two isomers. The acid measured was chiefly the α -acid.]

Ferriacetoacetic ester see **Acetoacetic acid ethyl ester**; - salts.

Ferriacetylacetone see **Acetylacetone**; - salts.

Ferribenzoylactic ester see **Benzoylactic acid ester**; - salts.

Ferribenzoylacetone see **Benzoylacetone**; - salts.

Ferricyanic acid. (Hydroferricyanic acid). $C_6H_5N_6Fe = H_3Fe(CN)_6$.

3K.A. at 0° ; **901, 903, 1959, 1963**. At 18° ; **971**. At 25° , $\Lambda(32) = 121.3$, (1024) = 153.0; **1836, 971**. Cond. with colloidal copper; **313**. E. m. f.; **372**.

Ferri-diacetyl bromide. $C_4H_6O_4BrFe = Fe(C_2H_3O_2)_2Br$.

Cond.; **1528**.

Ferri-diacetyl chloride. $C_4H_6O_4ClFe = Fe(C_2H_3O_2)_2Cl$.

Cond.; **1528**.

Ferri-oxalic acid. $C_6H_5O_{12}Fe = H_3Fe(C_2O_4)_3$.

Cond.; **1577**.

3(NH₄).A; **971**. - 3K.A; **1485**. E. m. f.; **1581a**.

Ferrocyanic acid. (Hydroferrocyanic acid). $C_6H_5N_6Fe = H_4Fe(CN)_6$.

At 25° , $\mu(32) = 875$, (1024) = 1223.6; [in Hg.U.]; **1362**.

Under pressure of 1-500 atmospheres; **220**.

2Ba.A; **1338**. - 2Ca.A; **158, 1338**. - 2Mg.A; **1836**. - 4K.A at

25° , $\Lambda(32) = 108.1$, (1024) = 152.2; **1836, 901, 903, 924, 1338**;

at 0° to 100° ; **839, 889, 901, 903, 924, 1024, 1338, 1709**,

1953a. Under pressure of 1-500 atmospheres; **220**. Cond.

with gelatin; **468**. Cond. with $CuSO_4$; **1709**. E. m. f.; **372**.

- 2Sr.A; **158**. - 2Zn.A in NH_3 , qual.; **606**.

Ferro-oxalic acid. $C_4H_2O_8Fe = H_2Fe(C_2O_4)_2$.

3K.A, e. m. f.; **1581a**.

Ficus elastica. (India-rubber tree). [The references to this are incomplete.]

Concentration of H and OH ions in sap; **587**.

Ficus sicomorus. (Mulberry fig). [The references to this are incomplete.]

Cond. of sap; **253**.

Fishes. [The references to this subject are incomplete.]

Cond. of fluids of various parts and organs of fishes, with a bibliography of the literature; **250, 253**.

Flavindulinium see **Phenylphenanthrophenazonium hydroxide**.

Fluor- see **Fluoro-**

Fluorenol-carboxylic acid see **Diphenylene-glycollic acid**.

Fluorenone. (Diphenylene-ketone. 9-Ketofluorene). $C_{12}H_8O$.

Comparative strength (colorim.); 1665.

Fluorenone-5-carboxylic acid. (Diphenylene-ketone carboxylic acid.

9-Ketofluorene-4-carboxylic acid). $C_{14}H_8O_3$.

Comparative strength (colorim.); m. p. 227° ; 1665.

Fluorenone-5-carboxylic acid ethyl ester. $C_{16}H_{12}O_3$.

Comparative strength (colorim.); 1665.

Fluorescein. $C_{20}H_{12}O_5$.

Effect of fluorescence on cond.; 1476. Effect of light on cond.;

325, 833, 1321. 2Na salt, effect of light on cond.; 1471a.

[The salt may have been used in the other references.]

Fluoroacetic acid. $C_2H_3O_2F = CH_2F.CO_2H$.

$k_A \times 10^8$ [at 25°] = 2.17; m. p. 33° .

$\Delta(32) = 82.3$, (1024) = 270.4, (∞) = 362.5.

Na.A [at 25°] $\Delta(32) = 76.7$, (1024) = 86.7; 1693.

m-Fluorobenzoic acid. $C_7H_5O_2F = F.C_6H_4.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.36$; increases on diln.

$\Delta(64) = 31.5$, (1024) = 111.4, (∞) = 355; 1371.

Formaldehyde. $CH_2O = HCHO$.

$k_A \times 10^{14}$ at $0^\circ = 1.4$ (hydrol.); 529, 512, 528. = 2.1 (hydrol.); 58.

At 25° , $\Delta(38.1) = 2.5$, (608.8) = 7.6; 959.

Cond. with NaOH; 58, 528. With casein and with gelatin; 1599.

Formaldehyde sulphurous acid. $CH_4O_4S = HCHO.H_2SO_3$.

At 25° , $\Delta(38.1) = 361.1$, (608.8) = 381.4, (∞) = 379.1 or 388.1; 959.

K.A at 25° , $\Delta(32) = 97.8$, (1024) = 116.7; 643. - Na.A at 25° ,

$\Delta(1000) = 89.6$; 959.

Formamide see **Formic acid amide**.

Formanilide. $C_7H_7ON = Ph.NH.CHO$.

$k_A \times 10^{10}$ at $25^\circ = 5$. $\mu(20) = 0.03$, (160) = 0.10, (∞) = 355; 538.

In NH_3 , qual.; 606.

Cond. with NaOH; 538.

Formhydroxamic acid. $CH_3O_2N = \overset{\text{O}}{\text{HCH.N.OH}}$.

$k_A \times 10^7$ at $25^\circ = 1$.

$\mu(32) = 0.7$, (64) = 1.2, (∞) = [380]; 1353a.

Formic acid. $CH_2O_2 = HCO_2H$.

$\alpha \times 10^4$ at $0^\circ = 4.69$; 787. At $8.52^\circ = 0.15$, extrapolated; 1330. At

$15^\circ = 1.23$; 1330. At $17^\circ = 0.1705$; 347. At $18^\circ = 6.47$; 787;

1380. At $18.8^\circ = 0.4$; m. p. 8.39° , contained about 0.2% aq.;

1575. At $19^\circ = 0.668$; 1853c. At $25^\circ = 2.91$; 2008; = 1.6;

753. At $30^\circ = 7.99$; 787.

In all the following measurements, k diminishes on dilution.

$k_A \times 10^4$ at $10^\circ = 1.94$; **875**. At $14.1^\circ = 1.98$; **838**. At $17^\circ = 2.07$ aq.; **164**. At $18^\circ = 2.2$ (colorim.); **1563**. At $20^\circ = 1.96$; **875**. At $25^\circ = 2.14$; **1370**, **44**; $= 2.0$ (neutral.); **295**. At $30^\circ = 1.97$; **875**. At $40^\circ = 1.96$; **875**. At $54.3^\circ = 1.83$; **44**. At $55^\circ = 2.5$ (action of diastase on starch); **2002**. T not stated; comparative, (colorim.); **951**; (precipitation of casein); **693**. Cond.; **171**, **294**, **380**, **542**, **787**, **788**, **838**, **1330**, **1747**, **1853c**, **1957**. At 25° , $\Lambda(32) = 29.3$, $(1024) = 134.7$, $(\infty) = 376$; **1370**.

In HCl ; **30**; qual.; **1897**. In HBr , no cond.; **30**, **1897**. In H_2S , no cond.; **1897**. In H_2SO_4 ; **223**. In N_2O_4 , no cond.; **602**. In SO_2 ; **1842**. In NH_3 , qual.; **606**. In Et and Me alc.; **787**, **788**.

Cond. with KOH ; **171**, **294**, **299**. With boric acid, qual.; **1184**. With alcohols and sugar; **45**. With lactose; **1747**. With Cu formate; **1618a**. With albumin; **2032**. Under pressure of 1–260 atmospheres; **542**. E. m. f.; **372**. As solvent; (**223**), (**347**), **746**, **753**, (**1853c**), **2008**.

NH_4A ; **823**. – Ba_2A ; **911**, **1953a**. – Ca_2A ; **502**, **1953a**. – Ce_3A ; **1496**. – Cu_2A ; **1618a**. In NH_3 , qual.; **606**. Cond. with formic acid; **1618a**. Cond. with pyridine; **1569**. – Gl salt; **1711**. – La_3A ; **1496**. – Pb_2A , in NH_3 , qual.; **606**. – LiA ; **1367**. – Mg_2A ; **1836**, **1837**, **1953a**. – KA ; **1367**, **380**, **753**. In HCO_2H ; **753**. In flame; **682**. – NaA at 25° , $\Lambda(32) = 87.8$, $(1024) = 98.1$; **1368a**, **1367**. At 10° – 40° ; **164**, **875**. Under pressure of 1–260 atmospheres; **542**. Cond. with organic compounds; **1994**. In HCO_2H ; **753**. In NH_3 , qual.; **606**. In flame; **682**. – Sr_2A ; **911**. – UO_2A ; **449**.

Formic acid amide. (Formamide). $\text{CH}_3\text{ON}=\text{H.CONH}_2$.

$\kappa \times 10^5$ at $0^\circ = 1.80$. At $25^\circ = 3.87$; b. p. 118° – 119° @ 18 mm.; **1844**, **1843**; **1506d**, **1853b**. At $19^\circ = 17.7$; **1853c**.

At 19° , $\Lambda(17.7) = 0.06$; **1853c**.

In SO_2 ; **1842**. In NH_3 ; **610**.

Cond. with HCl ; **410**, **1506d**. With NaOH ; **412**. With HgCl_2 ; **1097**. With Na formamide; **1506d**. As solvent; **1506d**, **1844**, (**1853c**).

B_3HCl ; **1506d**.

Formic acid amyl ester. $\text{C}_5\text{H}_{11}\text{O}_2 = \text{H.CO}_2\text{C}_5\text{H}_{11}$.

In NH_3 , qual.; **606**.

Effect of temperature on cond.; **106**.

Formic acid iso-butyl ester. $\text{C}_5\text{H}_{10}\text{O}_2$.

Effect of temperature on cond.; **106**.

Formic acid ethyl ester. $\text{C}_3\text{H}_6\text{O}_2$.

In NH_3 , qual.; **606**.

Effect of temperature on cond.; **106**.

Formic acid methyl ester. $C_2H_4O_2$.

Effect of temperature on cond.; 106.

Formic acid propyl ester. $C_4H_8O_2$.

Effect of temperature on cond.; 106.

Orthoformic acid see under the letter O.

Formylcyano- see **Cyanoformyl-**

Foxglove see **Digitalis**.

Fructose. (Laevulose). $C_6H_{12}O_6=CH_2OH.(CHOH)_4.CO.CH_2OH$.

$k_A \times 10^{12}$ at $0^\circ=3.6$ (hydrol.); 512. At $10^\circ=4.6$ (catal.) At $18^\circ=6.6$ (catal.). At $25^\circ=8.8$ (catal.). At $40^\circ=14.9$ (catal.); 1177, and 1150.

At 25° , $\Lambda(4)=1.54$; 1843; - also 1108, 1110, 1497.

In NH_3 , qual.; 606.

Cond. with boric acid and inorg. salts; 1497.

Fuchsine.

This is the hydrochloride or acetate of rosaniline or of a mixture of bases of which rosaniline is the chief part.

B.HCl [Probably, pure p-rosaniline HCl], at 25° , $\mu(273)=98.3$; 1402. $\mu(256)=87.3$; 882, 1265, 1266. At $18^\circ-90^\circ$; 1796.

At $15^\circ-100^\circ$; alone and with H_2SO_4 ; 1798.

[Structure not given.] Effect of light on cond.; 1321. In $MeNH_2$, small cond.; 637.

Fulminic acid. (Carbyloxime). $CHON=C:N.OH$.

Hg.2A; 1094. In NH_3 , qual.; 606. - Na.A at 0° , $\Lambda(32)=52.4$, (1024)=57.6; 1986. In aqueous soln. the sodium salt gives also the reactions of hydroxamic acid, showing a change due to hydration; see Palazzo, Tamburello, Gaz. Chim. Ital. 37, I, 1, (1907).

Fumaranic acid. (Anilino fumaric acid).

$C_{10}H_9O_3N=CO_2H.CH:CH.CO.NHPh$.

Na. A, [at 25° ,] $\Lambda(32)=64.1$, (1024)=74.2; 191.

Fumaric acid. $C_4H_4O_4=CO_2H.CH:CH.CO_2H$.

k increases on diln. in all measurements of cond.

$k_A \times 10^4$ at $0^\circ=9.4$; 1968a; =8.0 aq.; 1018. At $12^\circ=9.7$; 1968a.

At $18^\circ=11$ (colorim.); 1562, 1563, 1781. At $22^\circ=9.4$ aq.

164. At $25^\circ=10.1$; 1968a.=9.3; 1372; =11.8 (neutral.); 1718.

At $35^\circ=10.0$; 1968a.

Second $k_A \times 10^5=2.2$ (part.); 370; (inversion); 1335, 1638.=3 (cond.); 370, 1911.

Cond.; 170, 1718. At 25° , $\mu(32)=58.0$, (1024)=228.1, $(\infty)=353$; 1968a. $\mu(32)=56.4$, (1024)=228.0, $(\infty)=357$; 1372.

- Qual.; 1387.

In HBr, no cond. In HCl, small cond.; 30.

Cond. with KOH; 170. With NaOH; 1508, 1718.

- Mg.A; 319, 1836. - 2K.A and KH.A; 164. - NaH.A; 370.
 - 2Na.A, at 25°, $\Delta(32)=89.5$, (1024)=108; 370, 270; - 495.
- Fumaric acid mono ethyl ester.** $C_6H_5O_4=CO_2H.CH:CH.CO_2Et$.
 $k_A \times 10^4$ at 25°=4.8; diminishes on diln.
 $\mu(22.0)=34.5$, (704.0)=153.2, (∞)=354; 1859.
- Furfur-** see also **Furyl-**
- Furfuracrylic acid.** $C_7H_5O_3=C_4H_3O.CH:CH.CO_2H$.
 $k_A \times 10^5=3.25$; m. p. 141°; 1104.
- allo-Furfuracrylic acid.** $C_7H_5O_3=C_4H_3O.CH:HC.CO_2H$.
 $k_A \times 10^5=7.82$; m. p. 82°-86°; this acid contained a little furfuraacrylic acid; 1104.
- Furfurol.** (Furfuraldehyde. Furol). $C_5H_4O_2=C_4H_3O.CHO$.
 $\alpha \times 10^7$ at 0°=9.73; 1844, 1843. At 20°=11; 1590a. At 25°=1.61; b. p. 161° @ 753 mm.; 1847, 517, 1106, 1107, 1569, 1844.
 $k_A \times 10^{16}$ at 0° is less than 1 (hydrol.); 512.
 At 25°, $\Delta(2)=0.15$; 1843.
 In HBr and HI, good cond.; in H₂S, poor cond.; 1897.
 Cond. with Cu oleate; 1569. As solvent; 1106, 1107, 1569, 1590a, 1844, 1847, 1849, 1853a. As solvent under pressure; 1590a.
 Compound with H₂SO₃, no cond.; 962.
- Furyldihydro-resorcinol.** $C_{10}H_{10}O_3=C_4H_3O.C_6H_6O(OH)$.
 $k_A \times 10^5$ at 25°=1.5 aq.; diminishes on diln.; m. p. about 150° with dec. $\Delta(326.7)=25.4$, (1307)=48.0, (∞)=374; 1588.

G.

- Galactose.** $C_6H_{12}O_6=CH_2OH.(CHOH)_4.CHO$.
 α of soln. of 1 mol in 1 litre= 3.5×10^{-5} ; 322.
 In NH₃, qual.; 606. In MeNH₂, little cond.; 637.
- Gallein.** $C_{20}H_{12}O_7$; formerly given as $C_{20}H_{10}O_7$.
 In MeNH₂, little cond.; 637.
- Gallic acid.** (3,4,5-Trihydroxy-benzoic acid).
 $C_7H_5O_5=(OH)_3C_6H_2.CO_2H$. [$CO_2H=1$; $OH=3, 4, 5$.]
 $k_A \times 10^5$ at 0°=3.38; increases on diln. At 6.5°=3.6; increases, then diminishes on diln.; 1968a. At 18°=5.9 (colorim.); 1563, 1781. At 25°=3.9; increases, then diminishes on diln.; 1371, 1968, 1968a, 1184. At 35°=3.9; increases, then diminishes on diln.; 1968a.
 At 25°, $\mu(32)=11.7$, (1024)=66.5, (∞)=356; 1371. $\mu(1024)=62.5$, (∞)=348; 1968a. - 1718.
 In NH₃, qual.; 606. In Et alc.; 1185.

Cond. with boric acid; 1184, 1185. With NaOH; 1508, 1718.

Na.A at 25°, $\mu(2048)=74.4$; 1968a.

Gallic acid ethyl ester. $C_9H_{10}O_5=(OH)_3C_6H_5.CO_2Et$.

$k_A \times 10^8$ at 25°=9.7; diminishes on diln.; m. p. 155°.

$\mu(32)=0.6$, (256)=1.6, (∞)=351; 404.

Gallic acid methyl ester. $C_8H_8O_5$.

$k_A \times 10^8$ at 25°=9.7; diminishes, then increases on diln.; m. p. 193°.

$\mu(32)=0.6$, (256)=1.9; (∞)=352; 404.

Gallotannic acid see **Tannic acid**.

Gasteria maculata. [The references to this are incomplete.]

Cond. of sap; 253.

Gastric juice. [The references to this are incomplete.]

Cond.; 253.

Concentration of H and OH ions; 587.

Gelatin. There is still doubt as to whether gelatin is $C_xH_xO_xN_x$, or whether it also contains sulphur.

α of 0.726 g in 100=5.2 $\times 10^{-8}$; 445a. – 145b, 468, 1225b, 1225c, 1226, 1397, 1599.

Cond. with $K_4Fe(CN)_6$ and KCNS; 468. With HCl and inorg. salts; 1397. With $K_2Cr_2O_7$; 1225b, 1225c, 1226. With NaOH; 617a. With inorg. salts; 145b, 1599. With diastase; 807, 808. With formaldehyde and phenol; 1599. With trypsin; 145b. Penetration by X-rays, [no cond.]; 154. Effect of light on chromatized gelatin; 1225b, 1225c, 1226.

Gelsemine. $C_{22}H_{33}O_4N_2$; also given as $C_{24}H_{35}O_4N_2$.

$k_B \times 10^7$ at 15°=1.8 (hydrol.); 1779.

Gentisic acid see **2,5-Dihydroxy-benzoic acid**.

Gentisic aldehyde see **2,5-Dihydroxy-benzaldehyde**.

Gentisinic see **Gentisic**.

Gliadin. [The references to this are incomplete.]

H ion concentration; 1511b. See also; 2005.

Globulin. [The references to this are incomplete.] See **Edestin** and **Serum globulin**; also **Blood**.

Glu- see also **Gly-**

Glucinum. (Beryllium).

Complex salts with organic acids; 320a, 1521, 1711, 1712.

Gluconic acid see **Glyconic**.

Glucose. (Dextrose). $C_6H_{12}O_6=CH_2OH.(CHOH)_4.CHO$.

$k_A \times 10^{13}$ at 0°=1.8 (hydrol.); 512. At 10°=2.4 (hydrol.); 1177 and 1150. At 18°=3.6 (hydrol.); 1177 and 1150; approximates 0.14 (hydrol.); 532. At 25°=5.9 (sapon.); 1354, 392, 1036, 1177, 1150. At 40°=9.8 (hydrol.); 1177 and 1150.

- Cond.; **322, 1108, 1110, 1464a, 1497, 1746.**
 In NH_3 , qual.; **606.** In MeNH_2 , little cond.; **637.** In Me alc.; **1746.**
 Cond. with inorg. acids; **741, 1497, 1746.** With organic acids;
45. With NaOH and other bases; **532, 1746.** With salts;
1497, 1746. Concentration of H ions; **1259b.**
Glutaconic acid. $\text{C}_5\text{H}_4\text{O}_4 = \text{CO}_2\text{H}.\text{CH}_2.\text{CH}:\text{CH}.\text{CO}_2\text{H}.$
 $k_A \times 10^4$ at $25^\circ = 1.83$; increases on diln.; m. p. 132° .
 $\mu(32) = 26.2$, $(1024) = 127.0$, $(\infty) = 356$; **1838.**
Glutamic acid see **Aminoglutaric acid.**
Glutaminic acid see **Aminoglutaric acid.**
Glutaric acid. $\text{C}_5\text{H}_8\text{O}_4 = \text{CH}_2(\text{CH}_2.\text{CO}_2\text{H})_2.$
 $k_A \times 10^5$ at $18^\circ = 5.3$ (colorim.); **1563.** At $25^\circ = 4.75$; **1371, 1638, 1810.**
 Second $k_A \times 10^6 = 2.7$ (inversion); **1335, 1638.** -3.4 (part.); -2.9 (cond.); **370.**
 At 25° , $\mu(64) = 19.0$, $(1024) = 70.0$, $(\infty) = 354$; **1371.**
 Co.A. - Mg.A. - Ni.A.; **1736.** - 2K.A.; **494.** - NaH.A.; **370.**
 - 2Na.A at 25° , $\Delta(32) = 82.9$; $(1024) = 99$; **370, 270.**
Glutaric acid anhydride. $\text{C}_5\text{H}_6\text{O}_3.$
 Cond. showing change to acid; **1810.**
Gluten.
 A mixture of gliadin and glutenin; (with some included starch; **2005).**
 Relative cond. with inorg. and organic acids; **2005.**
 α, β -Glyceric acid. $\text{C}_3\text{H}_4\text{O}_4 = \text{CH}_2\text{OH}.\text{CHOH}.\text{CO}_2\text{H}.$
 $k_A \times 10^4$ at $25^\circ = 2.3$; **1184, 1370.**
 $\mu(32) = 29.1$, $(128) = 55.3$, $(\infty) = 357$; **1184.**
 Cond. with boric acid; **1184.**
Glycerine see **Glycerol.**
Glycerol. (Glycerine). $\text{C}_3\text{H}_8\text{O}_3 = \text{C}_3\text{H}_7(\text{OH})_3.$
 $\kappa \times 10^8$ at $0^\circ = 2.2$. At $5.9^\circ = 3.6$. At $11.7^\circ = 5.6$. At $14.8^\circ = 7.8$.
 At $16^\circ = 8.4$. At $17.6^\circ = 9.6$; **361.** At $20^\circ = 10$; **1590a.** At
 $21.3^\circ = 12.3$; **361.** At $25^\circ = 6$; **1592.**
 Cond.; **806, 1181, 1222, 1434, 1980.**
 In HBr , good cond. In H_2S , no cond.; **1897.** In HCN , no
 cond.; **943.** In NH_3 , qual.; **606.** In MeNH_2 , fair cond.;
637.
 Cond. with inorg. acids; **799, 1181.** With organic acids; **799,**
45. With KOH ; **385.** With NaOH ; **1035.** With salts;
145b, 361, 944, 1279, 1592. As solvent, under pressure;
1590a. As solvent; **(361), (385), (1221), (1278), 1279,**
1434a, 1590a, (1592). Dielectric constant; **582.**
Glycerol phosphoric acid see **Phosphoric acid glycerol ester.**

Glycine see Aminoacetic acid.

Glycocholic acid. $C_{26}H_{43}O_6N = C_{24}H_{39}O_4.NH.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.32$; diminishes on diln.

$\mu(750) = 97.7$, $(1500) = 128.3$, $(\infty) = 363$.

Na.A at 25° , $\mu(200) = 60.4$, $(800) = 64.9$; **228**.

Glycocoll see Aminoacetic acid.

Glycocoll-p-phenetidine. (Phenocoll).

$C_{10}H_{14}O_2N_2 = EtO.C_6H_4.NH.CO.CH_2.NH_2$.

B.HCl at 25° , $\Lambda(32) = 82.4$, $(1024) = 93.0$; **270**.

Glycocyamine see Guanidineacetic acid.

Glycogen. $(C_6H_{10}O_5)_x$.

Dialyzed soln., α at 20° , is of the order 3×10^{-5} ; **254**, **256**. - **252a**.

Cond. with NaOH; **252a**.

Glycol see Ethylene glycol.

Glycolamide see Glycollic acid amide.

Glycol chlorohydrin. (Chloroethyl alcohol. Ethylene chlorohydrin).

$C_2H_5OCl = CH_2Cl.CH_2OH$.

Cond. with HCl; **760**.

Glycoliminohydrin. $C_4H_{10}O_4N_2$ or $C_2H_5O_2N$.

At 25° , $\mu(64) = 67.3$, $(1024) = 76.5$ for formula, $C_4H_{10}O_4N_2$;
m. p. = 162° - 163° .

Cond. with HCl and NaOH; **781**.

Glycollic acid. $C_2H_4O_3 = CH_2OH.CO_2H$.

$k_A \times 10^4$ at $17^\circ = 1.57$ aq.; **164**. At 18° is about 1.5; **93**. At
 $25^\circ = 1.52$; **1184**, **1370**; (colorim.); **1781**.

Cond.; **93**, **94**, **171**, **782**, **1094**, **1495**. At 25° , $\Lambda(32) = 24.8$,
 $(1024) = 116.7$, $(\infty) = 363$; **1370**.

In HCl, no cond.; **30**. In NH_3 , qual.; **606**. In Et alc.; **782**,
1820.

Cond. with boric acid; **1184**. With $Cr(OH)_3$; **320b**. With
 MoO_3 ; **1495**. With acetic acid; **93**, **1821**. With KOH;
171. With organic salts; **94**.

Hg.2A; **1094**. - K.A; **94**. - Na.A at 18° ; **93**, **94**. At 25° ,
 $\Lambda(32) = 74.0$, $(1024) = 84.7$; **1368a**. - $UO_2.2A$; **449**.

Glycollic acid amide. (Glycolamide). $C_2H_5O_2N = CH_2OH.CONH_2$.

Cond. with HCl and NaOH; **781**.

Glycollic nitrile. $C_2H_3ON = CH_2OH.CN$.

$\alpha \times 10^6$ at $0^\circ = 5.16$. At $25^\circ = 8.34$; b. p. 98° @ 10 mm.; **1843**,
1844.

As solvent of NEt_4I ; **1844**.

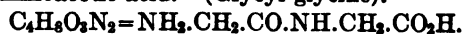
Glycol phosphoric acid see Phosphoric acid mono glycol ester.

Glyconic acid. (Gluconic acid). $C_6H_{12}O_7 = CH_2OH.(CHOH)_4.CO_2H$.

Ca.2A at 17° , $\Lambda(0.09) = 25.0$; **525**.

Glycosaccharic acid see Saccharinic acid.

Glycyl-aminoacetic acid. (Glycyl glycine).



$k_A \times 10^8$ at $25^\circ = 1.8$ (hydrol.).

$k_B \times 10^{11}$ at $25^\circ = 2$ (hydrol.); **519, 523.**

Cond. with HCl and NH_4OH ; **522.** With erepsin and pancreatin; **519, 523.**

Glycyl glycine see **Glycyl-aminoacetic acid.**

Glycyl-hydroxyphenyl-aminopropionic acid. (Glycyl tyrosine).

Cond. after digestion with trypsin; **145b.**

Glycyl tyrosine see **Glycyl-hydroxyphenyl-aminopropionic acid.**

Glyoxal. $\text{C}_2\text{H}_2\text{O}_2 = \text{OHC}\cdot\text{CHO}.$

In NH_3 , qual.; **606.**

Glyoxalic acid see **Glyoxylic acid.**

Glyoxaline. $\text{C}_8\text{H}_4\text{N}_2.$

$k_B \times 10^7$ [at 25°] = 1.2; m. p. $90^\circ.$

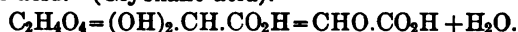
$\mu(32) = 0.42$, (256) = 1.4, $(\infty) = 231.4.$

$\text{B}\cdot\text{HNO}_3$ [at 25°], $\mu(32) = 98.1$, (1024) = 109.9; **428.**

Glyoxime carboxylic acid see **Dioximino-propionic acid.**

Glyoxime dicarboxylic acid see **Dioximino-succinic acid.**

Glyoxylic acid. (Glyoxalic acid).



$k_A \times 10^4$ at 25° is about 4.7; aq. used for soln. was not pure.

$\mu(32) = 41.7$, (1024) = 174, $(\infty) = 361$; **1370.**

Granatum. (Pomegranate). [The references to this are incomplete.]

Cond. of soln. of bark; **146.**

Grape. [The references to this are incomplete.]

Concentration of H and OH ions in grape juice; **587.**

Guaiacol. (2-Methoxy-phenol. Pyrocatechol mono methyl ether).



$\kappa \times 10^7$ at $25^\circ = 2.6$; **1569.**

$k_A \times 10^7$ at 25° is about 1; increases on diln. $\mu(23.7) = 0.4$, (189.2) = 2.0, $(\infty) = 356$; **70.**

In NH_3 , qual.; **606.**

Cond. with NaOH and HCl; **1508.** With Cu oleate; and as solvent; **1569.**

Guaiacolcarboxylic acid. (2-Hydroxy-3-methoxy-benzoic acid).



$k_A \times 10^8$ at $25^\circ = 1.38$ aq.; diminishes on diln.; m. p. $149^\circ - 149.5^\circ.$

$\mu(128) = 121$, (1024) = 235, $(\infty) = 354$; **1186.**

In Et alc.; **1185.**

Cond. with boric acid; **1185, 1186.**

Guanidine. $\text{CH}_5\text{N}_3 = \text{HN}\cdot\text{C}(\text{NH}_2)_2.$

$k_B \times 10^8$ at $15^\circ = 1.1$ (colorim.); **1175.**

Cond. at 25°, $\mu(32)=189.7$, (256)=208.3; in aq. containing some NH_4OH ; 1363.

B.HCl at 25°, $\Delta(32)=106.1$, (1024)=117.1; 270. – B. HNO_3 in NH_3 , qual.; 606. – B.Picrate; 405.

Guanidineacetic acid. (Glycocyamine).



$k_B \times 10^{11}$ at 40°=2.4 (catal.); 1995 and 1150. At 40.2°=2.32 (catal.); 1995.

Guanine. (2-Amino-6-oxypurine). $\text{C}_5\text{H}_5\text{ON}_5$.

$k_B \times 10^{12}$ at 40°=8.35 (catal.); 1995 and 1150. At 40.2°=8.07 (catal.); 1995.

Gum arabic. [The references to this are incomplete.]

Cond. of aq. soln. is not affected by radium; 2031. Cond. with KCl; 145b.

H.

Haematinic acid anhydride. $\text{C}_8\text{H}_8\text{O}_5 = \text{CO}_2\text{H}.\text{H}_7\text{C}_5:(\text{CO})_2\text{O}.$

$k_A \times 10^4$ at 25°=2.4; increases on diln. $\mu(40)=33.8$, (1280)=157; m. p. 96°–97°; 1029.

Haematinic imide. (Biliverdinic acid. Biliverdinic acid. Haemotricarboxylic acid imide.) $\text{C}_8\text{H}_8\text{O}_4\text{N} = \text{CO}_2\text{H}.\text{H}_7\text{C}_5:(\text{CO})_2\text{NH}.$

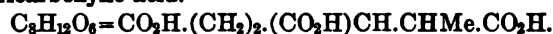
$k_A \times 10^5$ at 25°=3.6; diminishes on diln.; m. p. 113.4°–114.5°. $\mu(40)=14.1$, (1280)=72.9; 1029.

Cond. different from that in 1029; no data; 1032.

Haematoxylin. $\text{C}_{18}\text{H}_{14}\text{O}_6$.

In NH_3 , qual.; 606.

Haemotricarboxylic acid.



a) m. p. 140°–141°.

$k_A \times 10^4$ at 25°=2.50; diminishes on diln. $\mu(32)=32$, (1024)=125.3, (∞)=375; m. p. 140°–141°; 1030, 1033.

b) m. p. 175°–176°.

$k_A \times 10^4$ at 25°=2.45; diminishes on diln. $\mu(32)=31.7$, (1024)=130, (∞)=375; m. p. 175°–176°; 1030, 1033.

Heart. [The references to this are incomplete.]

Cond.; 156a, 253, 623, 624.

Helianthine see Dimethyl-aminoazobenzene sulphonic acid.

Heliotropine see Piperonal.

Helvetia Blue. (Soluble Blue.) Trisulphonic acid. The dye is the sodium salt. The free acid is triphenyl-p-rosaniline-trisulphonic acid $\text{C}_{27}\text{H}_{28}\text{ON}_3(\text{SO}_3\text{H})_3$.

Free acid, at 18°, $\mu(400)=556.0$, (1600)=667.2. At 90°, $\mu(400)=1156$, (1600)=1242. This is the cond. of a disulphonic acid. Cond. with KCl; 976a.

Hem- see also **Haem-**

Hempic see **Hemipinic**.

Hemipinamic acid see **Hemipinic acid mono amide**.

Hemipinic acid. (Dimethoxy-norhemipinic acid. 3,4-Dimethoxy-o-phthalic acid. Hemipic acid).

$C_{10}H_{10}O_6 = (MeO)_2C_6H_2(CO_2H)_2$. [$CO_2H=1, 2$; $MeO=3,4$.]
 $k_A \times 10^3$ at $25^\circ = 1.17$; increases on diln. $\mu(32) = 58.7$, (1024) = 230.4, (∞) = 352; **966, 1909**.

Hemipinic acid 2-mono amide. (2-Hemipinamic acid. α - acid).

$C_{10}H_{11}O_5N$. [$CO_2H=1$; $CONH_2=2$.]
 $k_A \times 10^3$ at $25^\circ = 7.0$; diminishes on diln. $\mu(64) = 22.6$, (1024) = 75.4, (∞) = 350; m. p. 160° – 162° ; [k is not given correctly in the original]; **1243, 1244**.

Hemipinic acid 1-mono amide. (1-Hemipinamic acid. β - acid).

$C_{10}H_{11}O_5N$. [$CO_2H=2$; $CONH_2=1$.]
 $k_A \times 10^4$ at $25^\circ = 4.3$; diminishes on diln. $\mu(64) = 53.7$, (1024) = 147.5, (∞) = 350; m. p. 142° ; [k is not given correctly in the original]; **1243, 1244**.

Hemipinic acid 1-mono ethyl ester. (β - ester).

$C_{12}H_{14}O_6 = (MeO)_2C_6H_2(CO_2Et)(CO_2H)$. [$CO_2H=2$; $CO_2Et=1$.]
 $k_A \times 10^4$ [at 25°] = 1.48; m. p. 144° – 145° . $\mu(182) = 52.8$, (1456) = 123.6, (∞) = 350; **1907**.

Hemipinic acid 2-mono ethyl ester. (α - ester).

$C_{12}H_{14}O_6$. [$CO_2H=1$; $CO_2Et=2$.]
 $k_A \times 10^3$ [at 25°] = 1.01; m. p. 147.5° – 149° . $\mu(139.3) = 108.6$, (1114.4) = 213.2, (∞) = 350; **1907**.

Hemipinic acid 1-mono methyl ester. (β - acid).

$C_{11}H_{13}O_6$. [$CO_2H=2$; $CO_2Me=1$.]
 $k_A \times 10^3$ at $25^\circ = 1.30$; m. p. 136° – 137° ; **1371, 1941**. $\mu(136.1) = 126.9$, (272.6) = 162.0, (∞) = 373; **1941**.

Hemipinic acid 2-mono methyl ester. (α - acid).

$C_{11}H_{13}O_6$. [$CO_2H=1$; $CO_2Me=2$.]
 $k_A \times 10^4$ at $25^\circ = 1.67$; m. p. 117° – 119° ; **1941**; = 1.60; diminishes on diln.; **1371**. $\mu(324.8) = 77.5$, (650.6) = 104.3, (∞) = 373; **1941**.

Hemipinic acid 1-mono propyl ester. (β -n-ester).

$C_{13}H_{16}O_6$. [$CO_2H=2$; $CO_2Pr=1$.]
 $k_A \times 10^4$ at $25^\circ = 9.3$; m. p. 125° – 125.5° ; **1909, 1907**. $\mu(255.5) = 142.6$, (1025) = 225.8, (∞) = 372; **1909**.

Hemipinic acid 2-mono propyl ester. (α -n-ester).

$C_{13}H_{16}O_6$. [$CO_2H=1$; $CO_2Pr=2$.]
 $k_A \times 10^4$ at $25^\circ = 1.46$; m. p. 131° – 132° ; **1909, 1907**. $\mu(510.9) = 88.9$, (1023) = 117.0, (∞) = 372; **1909**.

m-Hemipinic acid. (4,5-Dimethoxy-o-phthalic acid. Hemipinic acid of Ostwald).

$C_{10}H_{10}O_6 = (MeO)_2C_6H_2(CO_2H)_2$. [$CO_2H = 1,3$; $MeO = 4,5$. See Kirpal, Monatsh. 18, 462.]

$k_A \times 10^5$ at $25^\circ = 1.47$; diminishes on diln. $\mu(64) = 92.6$, $(1024) = 237.0$, $(\infty) = 352$; **1371**.

Heptadi-inene-carboxylic acid see *pseudo-m-Toluic acid*.

Heptane. C_7H_{16} .

$\kappa \times 10^{10}$ at $18^\circ = 4.1$.

Cond. with hydrocarbons; **386**. As influenced by radium; **873**.

$\alpha\beta$ -Heptenoic acid. $C_7H_{12}O_2 = Me.(CH_2)_3.CH:CH.CO_2H$.

$k_A \times 10^5 = 1.5$; b. p. $225^\circ - 228^\circ$ @ 737 mm. $\Delta(64) = 11.9$, $(1024) = 42$, $(\infty) = [376]$; **1547**.

Heptinic acid. (*iso*-Gentisic acid. *iso*-Heptinic acid). $C_8H_{12}O_3$.

$k_A \times 10^5$ at $25^\circ = 8.3$; m. p. $149^\circ - 151^\circ$; **1823**, **1831**. $\mu(128) = 34.4$, $(512) = 65.4$, $(\infty) = 352$; **1823**.

Heptoic acid. (Heptylic acid. Oenanthylic acid).

$C_7H_{14}O_2 = Me.(CH_2)_5.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.31$; b. p. 221.3° (cor.); **601**; $= 1.47$; **461**.

$\Delta(128) = 14.1$, $(1024) = 38.2$, $(\infty) = 352$; **601**. $\Delta(90.9) = 13.2$, $(\infty) = 368$; **461**.

In NH_3 , qual.; **606**.

Na.A at 25° , $\Delta(32) = 68.5$, $(1024) = 73.0$; **601**.

Heptoic aldehyde see **Heptyl aldehyde**.

Heptyl alcohol. $C_7H_{16}O$.

In NH_3 , qual.; **606**.

Heptyl aldehyde. (Heptoic aldehyde. Oenanthylic aldehyde).

$C_7H_{14}O = Me.(CH_2)_5.CHO$.

In HBr and HCl, good cond.; in HI, poor cond.; in H_2S , no cond.; **1397**. In NH_3 , qual.; **606**.

Heptylic acid see **Heptoic acid**.

Heptylmalonic acid. $C_{10}H_{18}O_4 = Me.(CH_2)_4.CHMe.CH(CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 1$; m. p. $97^\circ - 98^\circ$; **1638**, **1667**.

Second $k_A \times 10^7 = 6.1$ (inversion); **1638**.

At 25° , $\mu(199) = 125.8$, $(1592) = 240.0$, $(\infty) = 349$; **1638**.

Hetero cinnamic acid see **Cinnamic acid**.

Heteroxanthine see **7-Methyl xanthine**.

Hexachloro-benzene. (Perchloro-benzene). C_6Cl_6 .

In NH_3 , qual.; **606**.

Hexahydro-benzoic acid. (Cyclohexane-carboxylic acid).

$C_7H_{12}O_2 = C_6H_{11}.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.28$; increases on diln.; b. p. 232.5° ; **1138**; $= 1.34$; **2026**. $\Delta(64) = 10.4$, $(1024) = 40.6$, $(\infty) = 374.5$; **1138**.

$\Delta(80) = 11.5$, $(1280) = 43.3$, $(\infty) = 352$; **2026**.

Hexahydro-phenyl acetic acid see Cyclohexane-acetic acid.

Hexahydro-phenyl propionic acid see Cyclohexane-propionic acid.

cis-Hexahydro-o-phthalic acid. (Hexamethylene-1,2-dicarboxylic acid). $C_8H_{12}O_4 = C_6H_{10}(CO_2H)_2$.

$k_A \times 10^5$ [at 25°] = 4.4; m. p. 192°; **72, 1410**.

trans-Hexahydro-o-phthalic acid. $C_8H_{12}O_4$.

$k_A \times 10^5$ [at 25°] = 6.2; m. p. 221°; **72, 1410**.

cis-Hexahydro-p-phthalic acid. (Hexamethylene-1,4-dicarboxylic acid). $C_8H_{12}O_4$.

$k_A \times 10^5$ at 25° = 2.97 aq.; m. p. about 162°.

Second $k_A \times 10^5$ = 3.0; (inversion).

At 25°, $\mu(68.4) = 15.5$, $(1094) = 57.3$, $(\infty) = 351$; **1638**.

trans-Hexahydro-p-phthalic acid. $C_8H_{12}O_4$.

$k_A \times 10^5$ at 25° = 4.56 aq.; m. p. above 300°.

Second $k_A \times 10^5$ = 2.5 (inversion).

At 25°, $\mu(204.6) = 31.3$, $(1637) = 83.7$, $(\infty) = 351$; **1638**.

Hexahydro-toluic acid see Methylcyclohexane-carboxylic acid.

Hexahydroxy-trichloro-bromotriketo-hexamethylene. $C_6H_3O_3Cl_3Br$.

[At 25°], $\mu(128) = 3.1$, $(512) = 4.6$; m. p. 87°; **727**.

Hexamethylene-dicarboxylic acid see Hexahydro-phthalic acid.

1,1,3,3-Hexamethylene-tetracarboxylic acid. $C_{10}H_{12}O_8$.

$k_A \times 10^5$ at 25° = 1.2; increases on diln. $\mu(21.3) = 52.1$, $(680.0) = 228.6$, $(\infty) = 350$; **1859**.

Hexamethyl-p-rosaniline see Hexamethyl-triamino-triphenyl carbinol.

Hexamethyl-p-triamino-triphenyl carbinol. (Crystal Violet. Hexamethyl-p-rosaniline). $C_{25}H_{31}ON_3 = (C_6H_4.NMe_2)_3C.OH$.

Free base at 0°; **770**. At 25°, $\mu(256) = 150.5$; **770**.

B.Br and B.Br.2HBr; **734, 1571**. – B.Cl at 0°; **770**. At 25°, $\mu(128) = 88.3$, $(1024) = 95.0$; **770, 1266**. – B.HCl, B.3HCl; **734**.

Hexanaphthene-carboxylic acid see Methylpentamethylene-carboxylic acid.

Hexane. C_6H_{14} .

κ is extremely small; **386, 873a**.

Cond. alone and as affected by radio-active substances; **873**.

Cond. before and after continued passage of current; **1605**.

With organic compounds; **386**.

Hexanitro-diphenyl amine. $C_{12}H_5O_{12}N_7$.

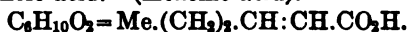
In aq. is too insol. to measure; **321, 754**. In pyridine; **754**; qual.; **321**.

Hexaphenyl-ethane. $C_{26}H_{30} = Ph_3C.CPh_3$.

In SO_2 , no cond.; **671**. See also Triphenyl-methyl.

Hexenoic acid see Hexenoic acid.

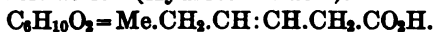
$\alpha\beta$ -Hexenoic acid. (Hexenic acid).



$k_A \times 10^5$ at $25^\circ = 1.89$. $\Lambda(32) = 9.2$, $(1024) = 49.2$, $(\infty) = 378$.

Na.A at 25° , $\Lambda(1024-32) = 10-11$; 571.

$\beta\gamma$ -Hexenoic acid. (Hydrosorbic acid).



$k_A \times 10^5$ at $25^\circ = 2.7$; diminishes on diln.; 571. $= 2.4$; 1371. $\Lambda(32) = 11.0$, $(1024) = 55.3$, $(\infty) = 378$; 571. $\Lambda(32) = 9.7$, $(\infty) = 357$; 1371.

Na.A at 25° , $\Lambda(32) = 64.9$, $(1024) = 75.2$; 1368a; - 571.

$\gamma\delta$ -Hexenoic acid. $\text{C}_6\text{H}_{10}\text{O}_2 = \text{Me} \cdot \text{CH} : \text{CH} \cdot (\text{CH}_2)_2 \cdot \text{CO}_2\text{H}.$

$k_A \times 10^5$ at $25^\circ = 1.74$; diminishes on diln. $\Lambda(32) = 8.8$, $(1024) = 47.1$, $(\infty) = 378$.

Na.A at 25° , $\Lambda(1024-32) = 10-11$; 571.

$\delta\epsilon$ -Hexenoic acid. $\text{C}_6\text{H}_{10}\text{O}_2 = \text{CH}_2 : \text{CH} \cdot (\text{CH}_2)_3 \cdot \text{CO}_2\text{H}.$

$k_A \times 10^5$ at $25^\circ = 1.92$; diminishes on diln. $\Lambda(32) = 9.3$, $(1024) = 49.2$, $(\infty) = 378$.

Na.A at 25° , $\Lambda(1024-32) = 10-11$; 571.

Hexinic acid. $\text{C}_7\text{H}_{12}\text{O}_2.$

$k_A \times 10^5$ at $25^\circ = 8.4$; m. p. $126^\circ-127^\circ$. $\mu(64) = 25.1$, $(512) = 66.3$, $(\infty) = 354$.

Na. A at 25° , $\mu(32) = 65.9$, $(1024) = 75.9$; 1823, 1831.

Hexoic acid see Caproic acid.

Hippuric acid see Benzoylamino-acetic acid.

Histidine. (α -Amino- β -imidazole-propionic acid).



$k_A \times 10^9$ at $25^\circ = 2.2$ (hydrol.).

$k_B \times 10^9$ at $25^\circ = 5.7$ (hydrol.).

Second $k_B \times 10^{13} = 5.0$ (catal.).

At 25° , $\Lambda(32) = 3.7$, $(1024) = 9.3$.

Na.A at 25° , $\Lambda(32) = 65$, $(1024) = 76$; $M(32) = 66.3$, $(1024) = 87.0$.

- B.HCl at 25° , $\Lambda(32) = 87$, $(1024) = 98$; $M(32) = 88.9$, $(1024) = 109.7$. - B.2HCl; 943.

Hofmann's Violet. (Triethyl-rosaniline). The dye is a mixture of salts of rosaniline and p-rosaniline bases.

In HCN, no cond.; 943. Effect of Röntgen rays on cond.; 416, 1476.

Homatropine. $\text{C}_{16}\text{H}_{21}\text{O}_3\text{N}.$

$k_B \times 10^7$ is over 1 (colorim.); 1778.

Homo-hydroxy-benzaldehyde see Hydroxy-toluic aldehyde.

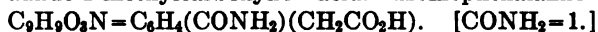
Homo-hydroxy-benzoic acid see Hydroxy-toluic acid.

Homophthalamic acid see Homophthalic acid mono amide.

Homophthalic acid.

[$\text{CO}_2\text{H}=1$; $\text{CH}_2\text{CO}_2\text{H}=2$.]

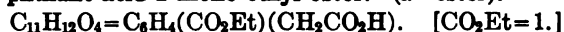
$k_A \times 10^4$ [at 25°] = 1.9. $\mu(256) = 74.5$, (1024) = 132.6, (∞) = 376.5; 1684.

Homo-o-phthalic acid 1-mono amide. (Benzene-1-carboxylic-acid-amide-2-methylcarboxylic acid. Homophthalamic acid).

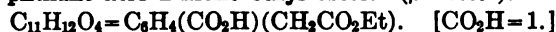
$k_A \times 10^5 = 5.0$. $\mu(512) = 55.6$, (1024) = 75.7, (∞) = 376; 1684.

Homo-o-phthalic acid 2-mono amide. (Homophthalamic acid. Phenylacetamide-o-carboxylic acid).

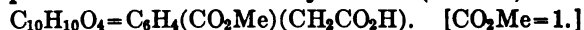
$k_A \times 10^5 = 8.9$; diminishes on diln. $\mu(256) = 52.7$, (1024) = 93.7, (∞) = 376; 1684.

Homo-o-phthalic acid 1-mono ethyl ester. (α - ester).

$k_A \times 10^5 = 4.6$; diminishes on diln.; m. p. 111° – 113° . $\mu(512) = 53.4$, (1024) = 71.9, (∞) = 374.6; 1684.

Homo-o-phthalic acid 2-mono ethyl ester. (β - ester).

$k_A \times 10^5 = 7.1$; diminishes on diln.; m. p. 107° . $\mu(256) = 47.1$, (1024) = 87.3, (∞) = 374.6; 1684.

Homo-o-phthalic acid 1-mono methyl ester. (α - ester).

$k_A \times 10^5 = 4.34$; m. p. 143° – 145° ; 1684; qual.; 1934. $\mu(512) = 51.9$, (1024) = 71.2, (∞) = 375.3; 1684.

Homo-o-phthalic acid 2-mono methyl ester. (β - ester).

$k_A \times 10^5 = 7.64$; m. p. 96° – 98° ; 1684; qual.; 1934. $\mu(256) = 48.9$, (1024) = 90.7, (∞) = 375.3; 1684.

Homo-salicyl aldehyde see Hydroxy-toluic aldehyde.**Homo-salicylic acid** see Hydroxy-toluic acid.**Hydantoin.** (2,4-Diketo-tetrahydro-imideazole). $\text{C}_3\text{H}_4\text{O}_2\text{N}_2$.

$k_A \times 10^{10}$ at $25^\circ = 7.59$ (catal.); m. p. 216° – 217° ; 1996. At 25° , $\mu(32) = 0.08$, (256) = 0.12; 1748.

Hydr- see also Dihydr-**Hydracrylic acid.** (β -Hydroxy-propionic acid).

$k_A \times 10^5$ at $25^\circ = 3$; 1186, 1370. $\mu(32) = 10.7$, (1024) = 57.3, (∞) = 358; 1186.

Cond. with boric acid; 1186.

Hydrastine. $\text{C}_{21}\text{H}_{21}\text{O}_6\text{N}$.

$k_B \times 10^7$ at 20° is about 1; (colorim.); 1779.

Hydratropic acid. (α -Phenylpropionic acid).



$k_A \times 10^5$ at $25^\circ = 4.25$; increases on diln. $\Lambda(64) = 17.8$, $(1024) = 66.6$, $(\infty) = 352$; **1371**.

Hydraziacetic acid. $\text{C}_2\text{H}_4\text{O}_2\text{N}_2 = \text{CO}_2\text{H.CH}_2\text{N}_2$.

At 25° , $\Lambda(32) = 73.0$; dec. about 190° ; **767**.

Hydrazine. $\text{N}_2\text{H}_4 = \text{H}_2\text{N.NH}_2$. [The references to this are incomplete.]

$\kappa \times 10^5$ at $0^\circ = 3.4$; b. p. 118.5° ; **1828**. At $25^\circ = 4$; **393**.

$k_B \times 10^5$ at $25^\circ = 3$ aq.; diminishes on diln.; about 16% too high; **271**.

Cond.; **393**; qual.; **1702**. At 25° , $\Lambda(32) = 1.9$, $(256) = 5.1$, $(\infty) = 224$; **271**.

Cond. as solvent; **393**, **1828**.

B.HCl at 25° , $\Lambda(32) = 111.5$, $(1024) = 125.0$; **270**.

Hydrazoic acid. (Azoimide). HN_3 . [The references to this are incomplete.]

$k_A \times 10^5$ at $0^\circ = 1.0$; **733**. At $25^\circ = 1.98$; diminishes on diln.; = 1.86 (inversion); **1954**; qual.; **419**.

At 25° , $\Lambda(10) = 5.4$, $(1000) = 46$, $(\infty) = 385$; **1954**.

Na.A at 25° , $\Lambda(32) = 100.8$, $(1024) = 107.9$; **1954**.

Hydro- see also **Dihydro-**

Hydro metallo cyanic acids of the general type $\text{H}_x\text{R}_x(\text{CN})_x$, where R is a metal, should be looked for under the head of the metal.

Those given in the tables, arranged by the metals, are: **cadmium, chromium, cobalt, copper (cupri- and cupro-), iridium, iron (ferri- and ferro-), manganese, mercury, molybdenum, nickel, palladium, platinum, silver, zinc**. The existence of some of these is denied, the so-called salts being regarded as mixtures or complexes of indefinite composition.

Hydrochelidonic acid. (Acetone-diacetic acid).



$k_A \times 10^5$ at $25^\circ = 4.6$ aq.; m. p. 143° . $\mu(32) = 13.2$, $(512) = 50.0$, $(\infty) = 352$.

Cond. with boric acid; **1186**.

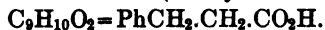
Hydrochloric acid. HCl. [The references to this are incomplete.]

Unit = R.O.

	v= (16)	(32)	(128)	(512)	(1024)
Λ at $0^\circ=$	245.9	249.0	254.8	256.4	256.5
Λ at $15^\circ=$	330.5	342.3	349.1	349.3	349.3
Λ at $25^\circ=$	388.5	395.6	403.7	403.7	403.7

(Tower, Conductivity of Liquids.)

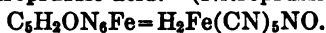
Hydrocinnamic acid. (Benzylacetic acid).



- $k_A \times 10^5$ at $18^\circ = 2.5$ (colorim.); **1563, 1781**. At $25^\circ = 2.27$; **1371**.
 At 25° , $\Lambda(64) = 13.2$, $(1024) = 49.1$, $(\infty) = 352$; **1371**.
m-Hydrocoumaric acid. (m-Hydroxy-hydrocinnamic acid).
 $C_9H_{10}O_3 = C_6H_4(CH_2CH_2CO_2H)(OH)$.
 Cond. alone and with NaOH in Et alc; **1508, 1718**.
p-Hydrocoumaric acid. $C_9H_{10}O_3$.
 $k_A \times 10^5$ at $25^\circ = 1.75$; diminishes on diln. $\Lambda(128) = 16.3$, $(1024) = 43.4$, $(\infty) = 352$; **1371**. See Phloretic acid.
Hydrocyanic acid. $CHN = HCN$ and $HN:C$.
 $\alpha \times 10^6$ at $0^\circ = 3.26$; **1853c**. $= 4.73$; **943, 1843, 369**. - **631**.
 $k_A \times 10^{10}$ at $10^\circ = 2.8$ (catal.); **1177** and **1150**. At $18^\circ = 4.7$ (catal.); **1177** and **1150**; - **1287**. $= 13$; **1883, 1865**. At $25^\circ = 7.2$ (catal.); **1177** and **1150**. - **1043**. At $40^\circ = 15.7$ (catal.); **1177** and **1150**.
 Cond.; at 25° , $\Lambda(25.9) = 2.4$; **1984**. - **1362**. $\Lambda(75) = 0.4$; **770**. - **1853c**.
 In HCl; **1646**.
 Cond. with HCl and NaOH; **1984**. With NH_3 ; **733**. With AgO; **510**. As solvent; **369, 943, (1853c)**.
Ba.2A; **1654**. - Cd.2A, complex; **1485**. - Cr, complex; **1487**. - Cu.A in NH_3 , qual.; **606**. - Au.2A in NH_3 ; **610**. - Hg.A; **246**; complex; **246**; **689**. Hg.2A; **246, 841, 907, 1094, 1461**. In NH_3 ; **315, 607, 610**. In NH_3 , qual.; **606**. In $MeNH_2$, fair cond.; **637**. In organic solvents; **1106, 1107**. With inorg. acids; **1097**. With HgO; **246, 841**. E. m. f.; **963**. Complex; **149, 246, 604, 689, 785, 841, 1008, 1094**. - K.A.; **907**. In HBr and HCl, good cond. In HI and PH_3 , no cond.; **1645**. In NH_3 ; **610**. In NH_3 , qual.; **606**. In acetamide; **1894**. In alc.; **764, 1654**. Cond. with organic compounds; **1654, 1746, 1747**. Complex; **149, 604, 907, 1050, 1485**. - Ag.A; **216**. In HCN, little cond.; **943**. In NH_3 ; **604, 607, 610**. In NH_3 , qual.; **606**. In pyridine, little cond.; **1106**. - Na.A; **1654**. - Zn.2A in NH_3 ; **610**. In NH_3 , qual.; **606**. - "Double" salts, and complex salts; **149, 246, 510, 604, 689, 785, 907, 971, 1008, 1050, 1094, 1434a, 1485, 1487, 1709, 1832**. See also under the separate headings, as Ferricyanic acid etc., for the "double" salts.
Hydrocyan-p-rosaniline. (p-Triamino-triphenyl acetic acid nitrile).
 $C_{20}H_{18}N_4 = (H_2N.C_6H_4)_3C.CN$.
 The salt-forming base changes to a pseudo base. At 25° , $\mu(512) = 74.9$ after 1 minute, $= 11.9$ after 60 minutes; **770**.
 Base + 3HCl, at 25° , $\mu(128) = 361.2$, $(1024) = 539.5$; **1266**.
Hydroferricyanic acid see **Ferricyanic acid**.

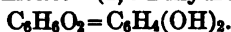
Hydroferrocyanic acid see **Ferrocyanic acid**.

Hydronitroprussic acid. (Nitroprussic acid).



2Na.A at 25°, $\Delta(32)=92.1$, $(1024)=109.3$; **1832**.

Hydroquinone. (1,4-Dihydroxy-benzene. Quinol).



$k_A \times 10^{10}$ at 0°=0.57 (hydrol.); **524**. At 25°=1.1 (hydrol.); **524**;=200?; increases on diln.; **70**.

Cond.; **1718**. At 25°, $\mu(23.2)=0.3$, $(92.8)=1.9$, $(\infty)=356$; **70**.

In HBr, little cond., in H₂S, no cond.; **1897**. In NH₃, qual.; **606**.

In MeNH₂, good cond.; **637**.

Cond. with NH₄OH; **733**. With NaOH; **1508**, **1718**. With FeCl₃; **756**.

2NH₄.A. - 2Na.A at 25°, $\Delta(200)=68.1$, $(400)=69.5$; **524**. - Compound with FeCl₃; **756**.

Hydroshikimic acid. $\text{C}_7\text{H}_{12}\text{O}_6$.

$k_A \times 10^5$ at 19°=3; m. p. 175° (uncor.). $\mu(29.6)=9.6$, $(59.2)=13.2$, $(\infty)=323.8$; **541**.

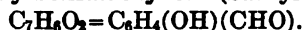
Hydroshikimic acid dibromide see **Dibromo-hydroshikimic acid**.

Hydrosorbic acid see $\beta\gamma$ -**Hexenoic acid**.

Hydroxy-amyl sulphonic acid, see *iso*-**Amylisethionic acid**.

Hydroxy-azobenzene see **Oxyazobenzene**.

o-Hydroxy-benzaldehyde. (Salicyl aldehyde).



$\kappa \times 10^7$ at 0°=1.0; b. p. 192°-193° @ 753 mm.; **1843**;=2.3; **1844**. At 25°=1.64; **1843**;=4.1; **1844**; **1106**, **1107**.

$k_A \times 10^6$ at 25° is under 10 (colorim.); **1397c**;=15.7; **643**.

At 25°, $\Delta(32)=7.8$, $(256)=22$, $(\infty)=356$; **643**. [The values of k and of Δ in **643** are probably too high. See the m- and p-isomers.] Also; **1508**, **1718**.

Cond. with NaOH and HCl; **1508**, **1718**. As solvent; **1106**, **1107**, **1844**.

m-Hydroxy-benzaldehyde. $\text{C}_7\text{H}_6\text{O}_2$.

$k_A \times 10^8$ at 25°=1.0 (cond.); is under 1.8 (colorim.); m. p. 104°; **1397c**.

At 25°, $\Delta(16)=0.17$, $(32)=0.20$, $(\infty)=380$; **1397c**. $\Delta(32)=3.8$, $(64)=5.3$, $(\infty)=356$; m. p. 104°; **643**.

Cond. with NaOH and HCl; **1508**.

p-Hydroxy-benzaldehyde. $\text{C}_7\text{H}_6\text{O}_2$.

$k_A \times 10^8$ at 25°=2.2 (cond.); is under 8 (colorim.); **1397c**.

At 25°, $\Delta(32)=0.29$, $(128)=0.63$, $(\infty)=380$; **1397c**. $\Delta(64)=3.6$, $(512)=10.3$, $(\infty)=356$; m. p. 116°; **643**.

Cond. with NaOH and HCl; **1508**.

o-Hydroxy-benzoic acid. (Salicylic acid). $C_7H_6O_3 = C_6H_4(OH)(CO_2H)$.

$k_A \times 10^3$ at $0^\circ = 0.85$ aq.; 515; -0.83 ; 1968a. At $6.9^\circ = 9.3$; 1968a.
 At $17^\circ = 1.01$ aq.; 164. At $18^\circ = 1$ (colorim.); 1781, 1563.
 At $20^\circ = 1.04$ aq.; 515. At $25^\circ = 1.05$; the extremes are
 1.02 and 1.08 aq.; 473, 515, 1184, 1371, 1581, 1968, 1968a.
 (neutral.); 1718. At $30^\circ = 1.09$ aq.; 515. At $35^\circ = 1.06$;
 1968a; 515. At $40^\circ = 1.12$ aq.; 515; 1581. At $45^\circ = 1.13$
 aq.; 515. At $50^\circ = 1.14$ aq.; 515, 1581. At $60^\circ = 1.11$ aq.
 At $70^\circ = 1.07$ aq. At $80^\circ = 1.01$ aq. At $90^\circ = 0.95$ aq. At
 $99^\circ = 0.87$ aq.; 1581.

Cond.; 168, 170, 388a, 515, 1968, 1968a. At 25° , $\mu(64) = 80.1$,
 (1024) = 224.1, $(\infty) = 357$; 1371.

In HBr and HCl; 30. In NH_3 , qual.; 606. In SO_2 , no cond.;
 1842. In Et alc.; 532, 647, 1316, 1649, 1718. In other
 organic solvents; 366, 1589, 1649; qual.; 934.

Cond. with boric acid; 1184. With NaOH; 168, 1091, 1508,
 1718. With KOH; 170. With NH_4OH ; 169. With ani-
 line; 145a, 169, 532. With allyl thiocarbimide, no cond.;
 1223.

$NH_4.A$; 145a, 165, 823. Basic NH_4 salt; 165. - $Cu.2A$, qual.;
 1090. - $Li.A$ in NH_3 , qual.; 606. In organic solvents; 474,
 482, 1589. - $K.A$; 164, 165. Basic K salt; 164. - $Ag.A$;
 848. - $Na.A$ at 25° , $\Delta(32) = 68.3$, (1024) = 79.7; 270, 1091,
 1199. At $25^\circ - 99^\circ$; 1581. At $0^\circ - 50^\circ$; 515. At $0^\circ - 35^\circ$;
 1968a. In NH_3 , qual.; 606. In organic solvents; 474,
 647. With boric acid; 1199. - $UO_2.2A$; 449.

o-Hydroxy-benzoic acid amide. (Salicylamide).

$C_7H_7O_2N = C_6H_4(OH)(CONH_2)$.

Hg salt, e. m. f.; 963.

o-Hydroxy-benzoic acid methyl ester. $C_8H_8O_3 = C_6H_4(OH)(CO_2Me)$.

$k_A \times 10^{11}$ at $25^\circ = 1$ (hydrol.); 666, 1594.

In NH_3 , qual.; 606.

o-Hydroxy-benzoic acid phenyl ester. $C_{13}H_{10}O_3$.

In NH_3 , qual.; 606.

iso-o-Hydroxy-benzoic acid. (iso-Salicylic acid). $C_7H_6O_3$.

This acid, with $k_A \times 10^3$ at $25^\circ = 1.1$, was shown to be an impure
 salicylic acid; 473.

m-Hydroxy-benzoic acid. $C_7H_6O_3 = C_6H_4(OH)(CO_2H)$.

In molten state, no cond.; 1055.

$k_A \times 10^5$ at $0^\circ = 7.6$ aq.; 515; -7.2 ; 1968a. At $13.2^\circ = 7.8$;
 1968a. At $17^\circ = 9.27$ aq.; 164. At $18^\circ = 9.2$ (colorim.);
 1563. At $20^\circ = 8.29$ aq.; 515. At $25^\circ = 8$; -8.33 aq.; 515; $-$
 7.60 aq.; m. p. 200° ; 1186; -8.67 ; 1371; -7.98 ; 1968a. At
 $30^\circ = 8.33$ aq. At $35^\circ = 8.30$ aq.; 515; -7.95 ; 1968a. At

40°=8.26 aq. At 45°=8.20 aq. At 50°=8.11 aq.; diminishes on diln.; 515.

Cond.; 168, 170, 515, 1508, 1718, 1968a. At 25°, $\mu(32)=18.2$ (1024)=91.6, (∞)=357; 1371.

In NH_3 , qual.; 606.

Cond. with boric acid; 1186. With NH_4OH ; 169. With KOH ; 170. With NaOH ; 168, 1091, 1508, 1718. With aniline; 169.

NH_4A and basic NH_4 salt; 165. - K.A; 164, 165. Basic K salt; 164. - Na.A at 25°, $\mu(32)=69.7$, (512)=78.6; 1091; 515.

p-Hydroxy-benzoic acid. $\text{C}_7\text{H}_5\text{O}_3=\text{C}_6\text{H}_4(\text{OH})(\text{CO}_2\text{H})$.

$k_A \times 10^5$ at 0°=2.51. At 13.2°=2.71; 1968a. At 17°=2.88 aq.; 164. At 18°=3.3 (colorim.); 1563; - 1781. At 25°=2.86; 1371, 1968a; =2.8; 1091; =2.68 aq.; m. p. 213°; 1186. At 35°=2.87; 1968a.

Cond.; 168, 170, 1508, 1718, 1968a. At 25°, $\mu(32)=10.6$, (1024)=56.3, (∞)=357; 1371.

In HCl ; 30. In HBr , no cond.; 30. In NH_3 , qual.; 606.

Cond. with boric acid; 1186. With NH_4OH ; 169. With KOH ; 170. With NaOH ; 168, 1091, 1508, 1718. With aniline; 169.

NH_4A and basic NH_4 salt; 165. - K.A; 164, 165. Basic K salt; 164. - Na.A at 25°, $\Lambda(32)=68.8$, (512)=77.0; 1091. - Cinchonine. A; 1620.

Hydroxybenzyl hypophosphoric acid. $\text{C}_7\text{H}_5\text{O}_3\text{P}=\text{Ph}.\text{CHOH}.\text{POH}.\text{OH}$.

Relative cond.; (the aniline salt has m. p. 99°); 1771.

2-Hydroxy-3-bromo- α -naphthoquinone. $\text{C}_{10}\text{H}_5\text{O}_2\text{Br}=\text{OH}.\text{C}_{10}\text{H}_4\text{O}_2\text{Br}$.

K.A at 25°, $\Lambda(32)=75.8$, (1024)=82.1; 1275.

Hydroxy-butenic acid see Ethenylglycollic acid.

α -Hydroxy-butyric acid. $\text{C}_4\text{H}_8\text{O}_3=\text{Et}.\text{CHOH}.\text{CO}_2\text{H}$.

At 25°, $\mu(32)=16.9$, (1024)=70.8, [in Hg.U.]; 1362.

β -Hydroxy-butyric acid. $\text{C}_4\text{H}_8\text{O}_3=\text{Me}.\text{CHOH}.\text{CH}_2.\text{CO}_2\text{H}$.

$k_A \times 10^5=3.1$; 1640; =2 (colorim.); 804.

$\Lambda(32)=11.2$, (1024)=58.4, (∞)=358.7; 1640.

In Et alc., cond. alone and with boric acid; 1185.

Na.A, $\Lambda(32)=69.4$, (1024)=82.9; 1640.

γ -Hydroxy-butyric acid. $\text{C}_4\text{H}_8\text{O}_3=\text{CH}_2\text{OH}.\text{CH}_2.\text{CH}_2.\text{CO}_2\text{H}$.

$k_A \times 10^5=1.93$. $\mu(79.8)=13.8$, (319.0)=27.3, (∞)=358; 812.

Hydroxy-iso-butyric acid. $\text{C}_4\text{H}_8\text{O}_3=\text{Me}_2\text{C}(\text{OH}).\text{CO}_2\text{H}$.

$k_A \times 10^4$ at 25°=1.06; 1370, 1186; (colorim.); 1643. At 25°, $\mu(32)=20.1$, (1024)=99.5, (∞)=355; 1370.

In NH_3 , qual.; 606.

Cond. with boric acid; 1186; qual.; 1184.

Na.A at 25°, $\mu(32)=67.7$, (1024)=79.4; 1367.

α -Hydroxy-camphoronic acid see Camphoronic acid.

β -Hydroxy-camphoronic acid. $C_9H_{14}O_7 = C_6H_{10}(OH)(CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 6.5$; diminishes, then increases on diln.; **1372**.

Second $k_A \times 10^6 = 8.4$ (inversion); **1638**; = 21; **1911**.

At 25° , $\mu(64) = 166.4$, $(1024) = 316.8$, $(\infty) = 352$; **1372**.

2-Hydroxy-5-chlorobenzoic acid. (5-Chloro-salicylic acid).

$C_7H_5O_3Cl = Cl.C_6H_3(OH)(CO_2H)$. [$CO_2H = 1$.]

$k_A \times 10^3$ at $25^\circ = 1.97$; increases on diln.; m. p. 172° . $\mu(320) = 191.5$, $(1280) = 274$, $(\infty) = 356$; **404**.

3-Hydroxy-2-chlorobenzoic acid. $C_7H_5O_3Cl$.

$k_A \times 10^3$ at $25^\circ = 1.40$; increases on diln.; m. p. 156° – 157° .

$\mu(256) = 158.3$, $(1024) = 242.8$, $(\infty) = 356$; **404**.

3-Hydroxy-6-chlorobenzoic acid. $C_7H_5O_3Cl$.

$k_A \times 10^3$ at $25^\circ = 1.40$; increases on diln.; m. p. 178° .

$\mu(64) = 91.8$, $(1024) = 240.3$, $(\infty) = 356$; **404**.

4-Hydroxy-3-chlorobenzoic acid. $C_7H_5O_3Cl$.

$k_A \times 10^5$ at $25^\circ = 5.7$; increases on diln.; m. p. 169° – 170° .

$\mu(128) = 29.1$, $(1024) = 77.6$, $(\infty) = 356$; **404**.

3-Hydroxy-2-chloro-6-bromobenzoic acid.

$C_7H_4O_3ClBr = (Cl)(Br)C_6H_2(OH)(CO_2H)$. [$CO_2H = 1$.]

$k_A \times 10^2$ at $25^\circ = 2.4$; diminishes on diln.; m. p. 116° – 118° .

$\mu(139.4) = 286.0$, $(1115.2) = 343.9$, $(\infty) = 355$; **404**.

3-Hydroxy-6-chloro-2-bromobenzoic acid. $C_7H_4O_3ClBr$.

$k_A \times 10^3$ at $25^\circ = 2$; m. p. 194° – 195° . $\mu(128) = 139.5$, $(1024) = 256.4$, $(\infty) = 355$; **404**.

α -Hydroxy-iso-cinchomeric acid. (6-Hydroxy-pyridine-2,5-dicarboxylic acid). $C_7H_5O_5N = C_5H_3N(OH)(CO_2H)_2$.

$k_A \times 10^2$ at $25^\circ = 1.67$; diminishes on diln.; **1372**.

Second $k_A \times 10^6 = 2$ (cond.); **1911**.

At 25° , $\mu(128) = 264$, $(1024) = 337$, $(\infty) = 355$; **1372**.

Hydroxy-cinnamic acid see Coumaric acid.

Hydroxy-dehydroacetic acid. $C_5H_6O_5$.

$k_A \times 10^3 = 1.59$; diminishes on diln.; m. p. 253° – 255° with dec.

$\mu(512) = 210.1$, $(1024) = 245.8$, $(\infty) = 360$; **558**.

Cond. increased by boric acid; **1186**.

Na.A, $\mu(32) = 63.4$, $(1024) = 74.3$; **558**.

4-Hydroxy-3,5-dibromo-azobenzene. (Benzeneazodibromo-phenol.)

$C_{12}H_8ON_2Br_2 = Ph.N_2.C_6H_2Br_2(OH)$.

In pyridine; **754**.

4-Hydroxy-3,5-dibromo-benzoic acid.

$C_7H_4O_3Br_2 = OH.C_6H_2Br_2.CO_2H$. [$CO_2H = 1$.]

In Et alc., cond. alone, and with boric acid; m. p. 267° – 268° ; **1185**.

2-Hydroxy-3,5-dichloro-benzoic acid. (3,5-Dichloro-salicylic acid).



$k_A \times 10^3$ at $25^\circ = 4.65$; diminishes on diln.; m. p. 219.5° .

$\mu(630) = 279.7$, $(1260) = 308.9$, $(\infty) = 355$; **404**.

3-Hydroxy-2,6-dichloro-benzoic acid. $\text{C}_7\text{H}_4\text{O}_5\text{Cl}_2$.

$k_A \times 10^3$ at $25^\circ = 2.26$; m. p. 122° – 124° .

$\mu(128) = 279.4$, $(1024) = 342.7$, $(\infty) = 355$; **404**.

m-Hydroxy-dimethyl-aniline see **m-Dimethyl-aminophenol**.

Hydroxyethyl sulphonic acid see **Isethionic acid**.

Hydroxy-fumaric acid. $\text{C}_4\text{H}_4\text{O}_5 = \text{CO}_2\text{H}.\text{C}(\text{OH}) : \text{CH}.\text{CO}_2\text{H}$.

$k_A \times 10^3$ at $17^\circ = 2.76$; m. p. 184° .

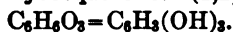
$\mu(20) = 70.4$, $(320) = 201.1$, $(\infty) = 337.1$; **1992**.

α -Hydroxy-glutaric acid. $\text{C}_5\text{H}_8\text{O}_5 = \text{CO}_2\text{H} . (\text{CH}_2)_2 . \text{CHOH} . \text{CO}_2\text{H}$.

Co salt. – Mg.A at 18° , $\mu(32) = 93.7$, $(1024) = 156.3$. – Ni salt; **1736**.

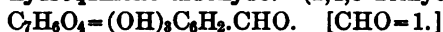
m-Hydroxy-hydrocinnamic acid see **m-Hydrocoumaric acid**.

Hydroxy-hydroquinone. (1,2,4-Trihydroxy-benzene).



Cond. alone and with NaOH; m. p. 140° ; **1508**, **1718**.

Hydroxy-hydroquinone aldehyde. (2,4,5-Trihydroxy-benzaldehyde).



$k_A \times 10^5$ at $25^\circ = 1.8$.

At 25° , $\mu(128) = 16.7$, $(1024) = 45.2$, $(\infty) = 355$; **643**.

Hydroxylamine. $\text{H}_2\text{ON} = \text{NH}_2\text{OH}$. [The references to this are incomplete.]

$\kappa \times 10^5$ at 33° is approximately 8; [in molten state]; **1176**.

$k_B \times 10^9$ at $15^\circ = 6.5$ (colorim.); **1775**. At $25^\circ = 7.4$ (hydrol.); **1984**.

Cond. at $v(14.2)$, is no greater than that of pure water; **1984**.

At 18° , $\mu(20) = 0.4$, $(500) = 1.4$; **1176**; $\Delta(500) = 19$; **1531**.

Cond. with NaOH; **1984**.

B.HCl at 25° , $\mu(32) = 105$, $(1024) = 116$; $M(32) = 107$; **1984**; **270**,

599, **1531**, **2029**. In NH_3 , qual.; **606**. In Me alc.; **2029**.

– B. HNO_3 ; **1531**. – B. H_3PO_4 . – B. H_2SO_4 ; **599**, **1531**.

Hydroxy-maleic acid. $\text{C}_4\text{H}_4\text{O}_5 = \text{CO}_2\text{H}.\text{C}(\text{OH}) : \text{CH}.\text{CO}_2\text{H}$.

$k_A \times 10^3$ at $17^\circ = 2.5$; m. p. 152° .

$\mu(20) = 68.5$, $(320) = 193.3$, $(\infty) = 337.1$; **1992**.

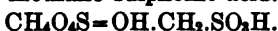
Hydroxy-maleic acid anhydride. $\text{C}_4\text{H}_2\text{O}_4$.

Pyridine salt, in pyridine; **1991**.

Hydroxy-malonic acid see **Tartronic acid**.

Hydroxy-mesitene-dicarboxylic acid anhydride see **iso-Dehydroacetic acid**.

Hydroxy-methane sulphonic acid. (Hydroxy-methyl- etc.)



$k_A \times 10^2$ is about 4; the acid is 97% dissociated at $v(256)$; **394**.

K.A at 25° , $\Lambda(32)=184.0$, $(1024)=243.1$; **643**. $\Lambda(1024-32)$ of the salts shows that the acid is monobasic; **394**.

2-Hydroxy-3-methoxy-benzoic acid see **Guaiacolcarboxylic acid**.

4-Hydroxy-3-methoxy-benzoic acid see **Vanillic acid**.

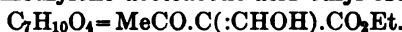
3-Hydroxy-4-methoxy-benzoic acid see **iso-Vanillic acid**.

o-Hydroxymethyl-benzoic acid. (Benzylalcohol-o-carboxylic acid).



$k_A \times 10^4$ at $25^\circ = 1.51$; diminishes on diln. M. p. 120° . $\mu(50) = 29.4$, $(1600) = 123$, $(\infty) = 353$; **395**, **827**.

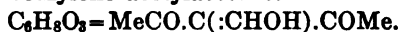
Hydroxymethylene-acetoacetic acid ethyl ester.



$k_A \times 10^5$ at $3.7^\circ = 3$. At $23.5^\circ = 3$; increases on diln. from dec.; b. p. 200° @ 750 mm.

At 3.7° , $\mu(64.1) = 8.7$, $(512.8) = 23.8$, $(\infty) = 202.6$. At 23.5° , $\mu(33.3) = 10.3$, $(266) = 32$; **387**.

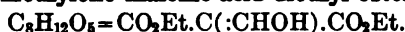
Hydroxymethylene-acetylacetone.



$k_A \times 10^5$ at $2.6^\circ = 2.2$; m. p. $47^\circ-48^\circ$.

$\mu(32) = 5.1$, $(256) = 14.2$, $(\infty) = 195$; **387**.

Hydroxymethylene-malonic acid diethyl ester.



k_A is greater than that of acetic acid; b. p. $217^\circ-219^\circ$; **387**.

α -Hydroxy-naphthoic acid. $C_{11}H_8O_3 = C_{10}H_6(OH)(CO_2H)$.

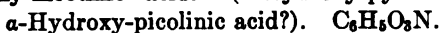
Cond. increased by boric acid; **1185**.

2-Hydroxy-1,4-naphthoquinone. (Naphthalic acid).



Na.A at 25° , $\Lambda(32)$ is about 71, (1024) is about 76; **1275**.

α -Hydroxy-nicotinic acid. (2-Hydroxy-pyridine-3-carboxylic acid.



$k_A \times 10^6$ at $25^\circ = 5.7$; diminishes on diln. $\mu(128) = 9.6$, $(1024) = 25.1$, $(\infty) = 357$; **1372**.

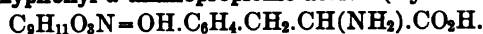
o-Hydroxyphenyl-acetic acid. $C_8H_8O_3 = OH.C_6H_4.CH_2.CO_2H$.

Cond. in Et alc., alone and with NaOH; m. p. 137° ; **1508**, **1718**.

p-Hydroxyphenyl-acetic acid. $C_8H_8O_3$.

Cond. alone and with NaOH; m. p. 148° ; **1508**, **1718**.

p-Hydroxyphenyl- α -aminopropionic acid. (Tyrosine).



$k_A \times 10^9$ at $25^\circ = 4$ (hydrol.); = 67 (cond.).

Second $k_A \times 10^{10} = 4$ (hydrol.).

$k_B \times 10^{12}$ at $25^\circ = 2.6$ (hydrol.)

At 25° , $\mu(512) = 0.5$, $(1024) = 3$, $(\infty) = 365$; **947**.

In NH_3 , qual.; 606.

Na.A at 25° , $M(64)=68.3$, $(1024)=82.2$; $\mu(64)=66.5$. - 2Na.A ,
 $M(128)=166.4$, $(1024)=196.7$; $\mu(128)=160$. - B.HCl at 25° ,
 $M(256)=288.4$, $(1024)=351.3$; $\mu(256)=110$; 947.

Hydroxy-phenyl-propionic acid see Phenyl-hydroxy-propionic acid.

Hydroxy-phenyltrimethyl ammonium hydroxide see Trimethyl-aminophenol.

o-Hydroxy-phenyl urethane. $\text{C}_9\text{H}_{11}\text{O}_2\text{N}=\text{HO.C}_6\text{H}_4\text{NH.CO}_2\text{Et}$.

κ of satd. soln. at $25^\circ=5.2\times 10^{-4}$.

With HCl , no change of cond.; 1660.

4-Hydroxy-*o*-phthalic acid.

$\text{C}_8\text{H}_6\text{O}_5=\text{OH.C}_6\text{H}_3(\text{CO}_2\text{H})_2$. [$\text{CO}_2\text{H}=1, 2$; $\text{OH}=4$.]

$k_A\times 10^3$ at $25^\circ=1.2$; probably contained a trace of iron; m. p. 181° . [Bentley, Weizmann, Jour. Chem. Soc. 91, 99, (1907), say that the true m. p. is 204° - 205° ; the acid m. p. 181° contains some 3-Hydroxy-phthalic acid.] $\mu(32.1)=67.9$, $(1033)=246.8$, $(\infty)=377$; 1909.

4-Hydroxy-*o*-phthalic acid 1-mono methyl ester.

$\text{C}_9\text{H}_6\text{O}_5$. [$\text{CO}_2\text{H}=2$; $\text{CO}_2\text{Me}=1$; $\text{OH}=4$.]

$k_A\times 10^4$ [at 25°]=1.54; m. p. 159° - 160° ; 1932.

4-Hydroxy-*o*-phthalic acid 2-mono methyl ester.

$\text{C}_9\text{H}_6\text{O}_5$. [$\text{CO}_2\text{H}=1$; $\text{CO}_2\text{Me}=2$.]

$k_A\times 10^4$ at $25^\circ=2.05$; m. p. 166° .

$\mu(63.7)=40.6$, $(1024)=136.7$, $(\infty)=375$; 1909.

4-Hydroxy-*o*-phthalic acid dimethyl ester.

$\text{C}_{10}\text{H}_{10}\text{O}_5=\text{OH.C}_6\text{H}_3(\text{CO}_2\text{Me})_2$.

$k_A\times 10^7$ at $25^\circ=1$ aq. $\mu(127.4)=1.5$, $(1022)=3.1$, $(\infty)=374$; 1909.

2-Hydroxy-*p*-phthalic acid. (2-Hydroxy-terephthalic acid).

$\text{C}_8\text{H}_6\text{O}_5$. [$\text{CO}_2\text{H}=1, 4$; $\text{OH}=2$.]

$k_A\times 10^3$ at $25^\circ=2.7$; increases on diln.; 1372, 1909.

Second $k_A\times 10^5=2.1$ (inversion); 1638; $=4.5$ (cond.); 1911.

At 25° , $\mu(256)=198.5$, $(1024)=290.5$, $(\infty)=355$; 1372.

2-Hydroxy-*p*-phthalic acid 1-mono methyl ester. (α - ester).

$\text{C}_9\text{H}_6\text{O}_5$. [$\text{CO}_2\text{H}=4$; $\text{CO}_2\text{Me}=1$; $\text{OH}=2$.]

$k_A\times 10^4$ at $25^\circ=2.50$; m. p. 206° - 208° .

$\mu(910)=141.3$, $(1820)=181.8$, $(\infty)=375$; 1909.

2-Hydroxy-*p*-phthalic acid 4-mono methyl ester. (β - ester.)

$\text{C}_9\text{H}_6\text{O}_5$. [$\text{CO}_2\text{Me}=4$.]

$k_A\times 10^3$ at $25^\circ=2.77$; m. p. 175° - 176.5° .

$\mu(255.7)=209.0$, $(1026)=294.9$, $(\infty)=375$; 1909.

α -Hydroxy-picolinic acid see α -Hydroxy-nicotinic acid.

β -Hydroxy-picolinic acid see Comanamic acid.

Hydroxy-pimelic acid anhydride. $C_7H_{10}O_4 = C_6H_9O_3 \cdot CO_2H$. [A lactone acid of pimelic acid.]

$k_A \times 10^5$ at $25^\circ = 2.76$; diminishes on diln.; m. p. 82.5° .

$\mu(32) = 11.0$, $(1024) = 57.4$, $(\infty) = 376$; **1975**.

Hydroxy-pivalic acid. (Hydroxy-trimethyl-acetic acid).

$C_6H_{10}O_3 = Me_2C(CH_2OH)CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.39$; m. p. 124° .

$\mu(32) = 7.8$, $(1024) = 42$, $(\infty) = 376.4$; **1215**.

α -Hydroxy-propionic acid see Lactic acid.

β -Hydroxy-propionic acid see Hydracrylic acid.

4-Hydroxy-pyridine-2,6-dicarboxylic acid see Ammonchelidonic acid.

6-Hydroxy-pyridine-2,5-dicarboxylic acid see **α -Hydroxy-iso-cinchomeric acid**.

2-Hydroxy-quinoline see Carbostyryl.

p-Hydroxy-quinoline-o-carboxylic acid. $C_{10}H_7O_3N$.

Cond. increased by boric acid; m. p. 260° – 262° with dec.; **1186**.

Hydroxy-salicylic acid see Dihydroxy-benzoic acid.

2-Hydroxy-5-sulphobenzoic acid see 5-Sulphosalicylic acid.

3-Hydroxy-o-toluic acid. (m-Homo-salicylic acid).

$C_8H_8O_3 = Me \cdot C_6H_3(OH)(CO_2H)$. [Me=1; $CO_2H=2$; OH=3.]

$k_A \times 10^3 = 1.06$; **1670**. $\Delta(1194.0) = 234.5$; **1672**.

6-Hydroxy-o-toluic acid. (β -o-Homo-m-hydroxy-benzoic acid).

$C_8H_8O_3$. [Me=1; $CO_2H=2$; OH=6.]

$k_A \times 10^4$ at $25^\circ = 1.69$; diminishes on diln.; m. p. 183° .

$\mu(256) = 66.5$, $(1024) = 118.7$, $(\infty) = 355$; **1429**.

2-Hydroxy-m-toluic acid. (β - or o-Cresotinic acid. o-Homo-salicylic acid). $C_8H_8O_3$. [Me=1; $CO_2H=3$; OH=2.]

$k_A \times 10^3$ at $18^\circ = 1.15$ (colorim.); **1563**. At $25^\circ = 1.03$; diminishes on diln.; **1186**, **1429**, **1670**. = 0.98 aq.; **1186**. = 1.06; **1429**.

At 25° , $\mu(512) = 178$, $(1024) = 218$, $(\infty) = 354$; **1186**.

In Et alc.; **1185**.

Cond. with boric acid; m. p. 166° – 167° ; **1185**, **1186**.

4-Hydroxy-m-toluic acid. (α - or p-Cresotinic acid. p-Homo-salicylic acid). $C_8H_8O_3$. [Me=1; $CO_2H=3$.]

$k_A \times 10^4$ at $18^\circ = 11$ (colorim.); **1563**. At $25^\circ = 8.9$; diminishes on diln.; m. p. 151° ; **1186**, **1429**, **1670**.

At 25° , $\mu(512) = 172$, $(1024) = 212$, $(\infty) = 354$; **1186**.

In Et alc.; **1185**, **1508**.

Cond. with boric acid; **1185**, **1186**. With NaOH; **1508**.

3-Hydroxy-p-toluic acid. (γ - or m-Cresotinic acid. m-Homo-salicylic acid). $C_8H_8O_3$. [Me=1; $CO_2H=4$.]

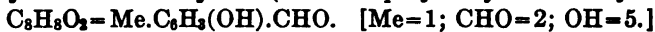
$k_A \times 10^4$ at $18^\circ = 6.5$ (colorim.); **1563**. At $25^\circ = 7.5$; diminishes on diln.; m. p. 177° ; **1186**, **1429**; = 6.8; **1670**.

At 25° , $\mu(512) = 162$, $(1024) = 202$, $(\infty) = 354$; **1186**.

In Et alc.; **1185**.

Cond. with boric acid; **1185, 1186**.

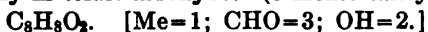
5-Hydroxy-o-toluic aldehyde. (m-Homo-p-hydroxy-benzaldehyde).



$k_A \times 10^6$ at $25^\circ = 2.95$; m. p. 110° .

$\mu(128) = 6.8$, $(1024) = 18.8$, $(\infty) = 354$; **643**.

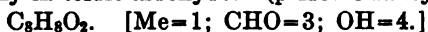
2-Hydroxy-m-toluic aldehyde. (o-Homo-salicyl aldehyde).



$k_A \times 10^5$ at $25^\circ = 1.52$; b. p. 208° .

$\mu(128) = 15.2$, $(1024) = 41.5$, $(\infty) = 354$; **643**.

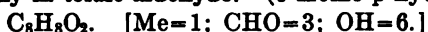
4-Hydroxy-m-toluic aldehyde. (p-Homo-salicyl aldehyde).



$k_A \times 10^5$ at $25^\circ = 2.17$; m. p. 56° .

$\mu(256) = 25.4$, $(1024) = 49.3$, $(\infty) = 354$; **643**.

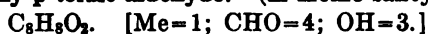
6-Hydroxy-m-toluic aldehyde. (o-Homo-p-hydroxy-benzaldehyde).



$k_A \times 10^6$ at $25^\circ = 4.66$; m. p. 118° .

$\mu(128) = 8.5$, $(1024) = 23.6$, $(\infty) = 354$; **643**.

3-Hydroxy-p-toluic aldehyde. (m-Homo-salicyl aldehyde).



$k_A \times 10^6$ at $25^\circ = 7.62$; b. p. 220° .

$\mu(256) = 15.3$, $(1024) = 29.9$, $(\infty) = 354$; **643**.

Hydroxy-triazolinacetic acid see **Methyl-hydroxy-triazole carboxylic acid**.

4-Hydroxy-2',4',6'-tribromo-azobenzene. (Tribromo-benzene-azophenol). $\text{C}_{12}\text{H}_7\text{ON}_2\text{Br}_3 = \text{Br}_3\text{C}_6\text{H}_2 \cdot \text{N}_2 \cdot \text{C}_6\text{H}_4 \cdot \text{OH}$.

In pyridine; **754**.

Hydroxy-trimethyl-acetic acid see **Hydroxy-pivalic acid**.

Hydroxy-trimethyl-phenyl ammonium hydroxide see **m-Trimethyl-aminophenol**.

α -Hydroxy- $\alpha\beta\beta$ -trimethyl-propionic acid.



$k_A \times 10^4 = 1.14$; m. p. $75^\circ - 77^\circ$; **1411**.

β -Hydroxy- $\alpha\beta\beta$ -trimethyl-propionic acid. (*tertiary*-Trimethyl-ethyl-enelactic acid). $\text{C}_8\text{H}_{12}\text{O}_3 = \text{Me}_2\text{C}(\text{OH}) \cdot \text{CHMe} \cdot \text{CO}_2\text{H}$.

$k_A \times 10^5$ at $25^\circ = 3.5$; diminishes on diln.; b. p. 160° @ 35 mm.; **640, 1411, 1704**.

$\mu(39.5) = 13$, $(632) = 47$, $(\infty) = 351$; **1704**.

Hydroxy-trimethyl-succinic acid.



$k_A \times 10^4$ at $25^\circ = 9$; [the values 8.46 in **64**, and 9.38 in **229**, differ because of the use of different values of $\mu(\infty)$]; m. p. 151° , 153° , 159° depends on mode of heating; **64, 229, 1418**.

$\mu(28)=52.3$, $(112)=97.1$, $(\infty)=351$; **229**. $\mu(1112.5)=214.7$, $(\infty)=353$; **64**.

Hydroxy-uracil see **Oxyuracil**.

α -Hydroxy-valeric acid. $C_5H_{10}O_3 = Me.(CH_2)_2.CHOH.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.32$ aq.

$\mu(64)=30.7$, $(512)=79.8$, $(\infty)=350$.

Cond. with boric acid; **1186**.

γ -Hydroxy-valeric acid. $C_5H_{10}O_3 = Me.CHOH.(CH_2)_2.CO_2H$.

$k_A \times 10^5 = 2.07$; diminishes on diln.

$\mu(36.4)=9.7$, $(1163.2)=50.4$, $(\infty)=358$; **812**.

Hyoscyamine. (l-Tropic acid tropine ester). $C_{17}H_{23}O_3N$.

At 25° , $\mu(100)=18.1$, $(800)=38.6$; **1864**. [Hyoscyamine is partly decomposed by aq., therefore the cond. may be due to tropic acid].

I.

Imido see **Imino**.

Iminobenzoic acid iso-amyl ester. (Benzimino amyl ether).

$C_{12}H_{17}ON = Ph.C(NH)O.C_5H_{11}$.

$k_B \times 10^8$ at $25^\circ = 1.7$ (hydrol.); **1233**, **1657**.

B.HCl at 25° , $\Lambda(32)=86.7$, $(256)=95.3$; $M(32)=88.5$; **1233**.

Iminobenzoic acid iso-butyl ester. $C_{11}H_{15}ON = Ph.C(NH)O.iso-Bu$.

$k_B \times 10^8$ at $25^\circ = 1.25$ (hydrol.); **1233**, **1657**.

B.HCl at 25° , $\Lambda(32)=85.8$, $(256)=95.8$; $M(32)=87.7$; **1233**.

Iminobenzoic acid ethyl ester. (Benzimino ethyl ether).

$C_9H_{11}ON = Ph.C(NH)O.Et$.

$k_B \times 10^8$ at $25^\circ = 1.1$ (hydrol.); b. p. 115° @ 21.5 mm.; **439**, **1657**.

B.HCl at 0° ; **1590**. At 25° , $\Lambda(32)=83.4$, $(256)=92.4$; $M(32)=85.1$; **439**.

Iminobenzoic acid methyl ester. $C_8H_9ON = Ph.C(NH)O.Me$.

$k_B \times 10^9$ at $25^\circ = 4.7$ (hydrol.); b. p. 104° @ 20.5 mm.; **439**, **1657**.

B.HCl at 0° ; **1590**. At 25° , $\Lambda(32)=86.5$, $(256)=94.5$; $M(32)=89.7$; **439**.

Iminobenzoic acid norm.-propyl ester. $C_{10}H_{13}ON = Ph.C(NH)O.Pr$.

$k_B \times 10^8$ at $25^\circ = 1.54$ (hydrol.); b. p. 121° @ 16 mm.

B.HCl at 25° , $\Lambda(32)=82.4$, $(256)=91.1$; $M(32)=83.6$; **439**.

Iminobenzoic acid iso-propyl ester. $C_{10}H_{13}ON$.

$k_B \times 10^8$ at $25^\circ = 1.8$ (hydrol.); b. p. 114° @ 20 mm.

B.HCl at 25° , $\Lambda(32)=82.0$, $(256)=90.1$; $M(32)=83.9$; **439**.

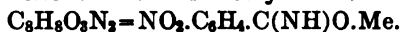
Iminomethyl- see **Methylimino-**

Imino- β -naphthoic acid ethyl ester. $C_{13}H_{13}ON = C_{10}H_7.C(NH)O.Et$.

$k_B \times 10^9$ at $25^\circ = 7.9$ (hydrol.); **1233**, **1657**.

B.HCl at 25° , $\Lambda(32)=87.8$, $(256)=96.6$; $M(32)=90.0$; **1233**.

Imino-m-nitrobenzoic acid ethyl ester.
 $k_B \times 10^9$ at 25° = 1 (hydrol.); **1233, 1657.**

 B.HCl at 25°, $\Lambda(32) = 88.1$, (256) = 96.9; $M(32) = 94.1$; **1233.**
Imino-m-nitrobenzoic acid methyl ester.
 $k_B \times 10^{10}$ at 18° = 3.7 (hydrol.); m. p. 50.6°.

 B.HCl at 18°, $\Lambda(32) = 73.8$, (256) = 80.8; $M(32) = 79.3$; **439.**
Imino-phenylacetic acid ethyl ester. $\text{C}_{10}\text{H}_{13}\text{ON}.$
 $k_B \times 10^9$ at 25° = 4 (hydrol.).

 B.HCl at 25°, $\Lambda(32) = 85.6$, (128) = 93.2; $M(32) = 90.1$; **1233.**
Imino-o-toluic acid methyl ester. $\text{C}_9\text{H}_{11}\text{ON}.$
 $k_B \times 10^9$ at 25° = 2.3 (hydrol.).

 B.HCl at 25°, $\Lambda(32) = 94.8$, (256) = 103.3; $M(32) = 99.0$; **1233.**
Imino-p-toluic acid ethyl ester. $\text{C}_{10}\text{H}_{13}\text{ON} = \text{Me} \cdot \text{C}_6\text{H}_4 \cdot \text{C}(\text{NH})\text{O} \cdot \text{Et}.$
 $k_B \times 10^8$ at 25° = 1.97 (hydrol.); **1233, 1657.**

 B.HCl at 25°, $\Lambda(32) = 88.0$, (256) = 95.2; $M(32) = 89.1$; **1233.**
Indenone see **Indone.** [Derivatives given in 1665.]**Indigo.**
 In MeNH_2 , good cond.; **637.**
Indigo White. $\text{C}_{16}\text{H}_{12}\text{O}_2\text{N}_2 = \text{OH} \cdot \text{C}_{16}\text{H}_{10}\text{N}_2 \cdot \text{OH}.$
 Mono Na salt at 18°, $\mu(19.4) = 62.6$, (37.9) = 67.7; **976c.**

 Measurement of an impure salt; **976b.**
Pr-2-(α)-Indolecarboxylic acid. $\text{C}_9\text{H}_7\text{O}_2\text{N}.$
 $k_A \times 10^4$ at 25° = 1.77 aq.; m. p. 204°.

 $\Lambda(173.2) = 56.4$, (1385.6) = 136.1, (∞) = 352; **23.**
Pr-3-(β)-Indolecarboxylic acid. $\text{C}_9\text{H}_7\text{O}_2\text{N}.$
 $k_A \times 10^6$ at 25° = 5.6 aq.; diminishes on diln.; m. p. 218°.

 $\Lambda(700) = 21.5$, (1400) = 29.3, (∞) = 352; **23.**
Indophenosafranine see **sym.-Phenosafranine.****Indoxylic acid ethyl ester.** $\text{C}_{11}\text{H}_{11}\text{O}_2\text{N}.$
 In pyridine, almost no cond.; **754.**
Inosinic acid. $\text{C}_{10}\text{H}_{12}\text{O}_8\text{N}_4\text{P}.$
 $k_A \times 10^2$ at 25° = 1; diminishes on diln. $\mu(32) = 161$, (1024) = 243.6, (∞) = 373.

 2Na.A at 25°, $\Lambda(32) = 66.8$, (1024) = 87.7; **708.**
Intestinal juice. [The references to this are incomplete.]
 Concentration of H and OH ions; **587.**
Invertin.
 Concentration of H ions; **1639b.**
Iod- see **Iodo.****Iodoacetic acid.** $\text{C}_2\text{H}_3\text{O}_2\text{I} = \text{CH}_2\text{I} \cdot \text{CO}_2\text{H}.$
 $k_A \times 10^4$ at 25° = 7.1; m. p. 82°.

$\Lambda(32)=50.6$, $(1024)=207$, $(\infty)=362$; **1840**.

In acetone; **475**.

Iodoacetic acid ethyl ester. $C_4H_7O_2I=CH_2I.CO_2Et$.

In SO_2 , little cond.; b. p. $178^\circ-180^\circ$; **1829**, **1842**.

Iodobenzene. C_6H_5I .

In SO_2 , no cond.; **1829**, **1842**. In NH_3 , qual.; **606**.

o-Iodobenzoic acid. $C_7H_5O_2I=I.C_6H_4.CO_2H$.

$k_A \times 10^3$ at $25^\circ=1.32$; m. p. 226° ; **53**, **1581**. At $40^\circ=1.1$ aq.

At $50^\circ=0.93$ aq. At $60^\circ=0.78$ aq. At $70^\circ=0.68$ aq. At

$80^\circ=0.58$ aq. At $90^\circ=0.49$ aq. At $99^\circ=0.42$ aq.; **1581**.

[At 25° ,] $\Lambda(169)=134$, $(1352)=254$, $(\infty)=[356]$; **53**.

K.A.; **1728**. - Na.A at 25° , $\Lambda(64)=64.2$, $(128)=67.4$; **1728**;

$\Lambda(1024)=75.0$; **1581**.

m-Iodobenzoic acid. $C_7H_5O_2I$.

$k_A \times 10^4$ at $25^\circ=1.63$; diminishes on diln.; **175**. At $60^\circ=1.25$

aq. At $70^\circ=1.2$ aq. At $80^\circ=1.1$ aq. At $90^\circ=1.0$ aq.

At $99^\circ=0.94$ aq.; **1581**.

At 25° , $\Lambda(1357)=132.5$, $(2714)=166.8$, $(\infty)=356$; **175**.

p-Iodobenzoic acid. $C_7H_5O_2I$.

Cs.A. - K.A. - Na.A at 25° , $\Lambda(64)=66.0$, $(128)=67.4$. - Rb.A; **1728**.

γ -Iodobutyric acid. $C_4H_7O_2I=CH_2I.(CH_2)_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ=2.3$; m. p. $40^\circ-41^\circ$; **1099** and **1908**.

$\Lambda(32)=10.2$, $(64)=14$, $(\infty)=356$; **1099**.

Iodoform see **Triiodo-methane**.

Iodomethyl-triethyl ammonium chloride.

$C_7H_{17}NClI=(CH_2I)(Et_3)N.Cl$.

At 25° , $\Lambda(32)=86.1$, $(1024)=98.6$; **270**.

Iodomethyl-trimethyl ammonium chloride.

$C_4H_{11}NClI=(CH_2I)(Me_3)N.Cl$.

At 25° , $\Lambda(32)=92.6$, $(1024)=105.2$; **270**.

β -Iodopropionic acid. $C_4H_5O_2I=CH_2I.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ=9$; aq. used for soln. was not pure; **1370**.

$\Lambda(32)=18.6$, $(1024)=90.7$, $(\infty)=358$; **1370**.

In SO_2 ; **1842**.

Na.A at 25° , $\Lambda(32)=66.9$, $(1024)=78.6$; **270**.

Iodosobenzene. $C_6H_5OI=Ph.IO$.

In NH_3 , qual.; **606**.

o-Iodosobenzoic acid. $C_7H_5O_3I=C_6H_4(IO).CO_2H$.

$k_A \times 10^7$ [at 25°]=6; m. p. 226° to 244° ; varies with mode of heating.

$\Lambda(224)=4.4$, $(896)=8.2$, $(\infty)=[356]$; **53**.

4-Iodo-2-toluidine-5-sulphonic acid.

$C_7H_5O_3NIS=Me.C_6H_2(NH_2)(I).SO_3H$. [Me=1; $NH_2=2$.]

$k_A \times 10^4$ at 25° is about 5; decomposes during measurement.

$\mu(256) = 123.5$, $(1024) = 144.3$, $(\infty) = [355]$; **492**.

δ -Iodovaleric acid. $C_5H_9O_2I = CH_2I.(CH_2)_3.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.7$; m. p. 56° – 57° ; **1099** and **1908**.

$\Lambda(64) = 12.3$, extrapolated, $(\infty) = 354$; **1099**.

Iodoxybenzene. $C_6H_5O_2I$.

In NH_3 , qual.; **606**.

Iridium cyanic acid. $C_6H_3N_6Ir = H_3Ir(CN)_6$.

3Ba.2A. – **3Cu6NH₃.2A.** – **3K.A** at 25° , $\Lambda(32) = 136.0$, $(1024) = 173.3$; **1494**.

Iron see **Diferri-pentaacetyl-hydroxide**, **Ferricyanic acid**, **Ferri-diacetyl bromide**, **Ferri-diacetyl chloride**, **Ferri-oxalic acid**, **Ferrocyanic acid**, **Ferro-oxalic acid**, **Hydronitroprussic acid**, **Oxyhaemoglobin**.

Isatin see **o-Aminobenzoyl-formic acid anhydride**.

Isatinic acid see **o-Aminobenzoyl-formic acid**.

Isatoic acid see **o-Aminobenzoyl-formic acid**.

Isatoxime. (Nitroso-oxindole). $C_8H_7O_2N_2$.

$k_A \times 10^8$ at $25^\circ = 2.8$ (catal.); $= 0.02$ (cond.); m. p. 202° .

$\mu(480) = 0.1$, $(960) = 0.2$, $(\infty) = 351$; **752**.

Isethionic acid. (Hydroxyethyl sulphonic acid).

$C_2H_5O_4S = OH.CH_2.CH_2.SO_3H$.

$k_A \times 10^2$ is approximately 4; the acid is 97% dissociated at $v(256)$; $\Lambda(1024-32)$ of the salts, shows that the acid is monobasic; **394**.

Iso see under letter beginning the next word; *e. g.* **iso-Amyl** is given under **Amyl**.

Itaconic acid. $C_5H_4O_4 = CO_2H.CH_2.C(:CH_2).CO_2H$.

$k_A \times 10^4$ diminishes on diln. at all temperatures above 17° . At $0^\circ = 1.24$; **1968a**. At $17^\circ = 1.44$ aq; **164**. At $18^\circ = 1.6$ (colorim.); **1563**, **1781**. At $18.1^\circ = 1.45$; **1968a**. At $25^\circ = 1.51$; m. p. 161° ; **1638**, **1968a**; $= 1.21$; **1372**, **1500b**. At $35^\circ = 1.55$; **1968a**.

Second $k_A \times 10^6 = 2.2$ (part. and inversion); **370**, **1638**.

Cond.; **170**. At 0° – 35° ; **1968a**. At 25° , $\mu(32) = 23.7$, $(1024) = 113.3$, $(\infty) = [351]$; **1968a**. $\mu(44.4) = 25.2$, $(\infty) = 355$; **1372**.

Cond. with KOH ; **170**.

Mg.A; **1836**. – **Na.A**; **370**. – **2Na.A** at 25° , $\Lambda(32) = 80.7$, $(1024) = 97.0$; **270**, **370**.

Itaconic acid anhydride. $C_5H_4O_3$.

Cond. showing change to acid; **1500b**.

K.

Ketofluorene see **Fluorenone**.

Ketoindene see **Indone**. [Derivatives given in 1665.]

Ketoxime-acetic-carboxylic acid see **Oximosuccinic acid**.

Kidney. [The references to this are incomplete.]

Cond.; 156a, 623 and 253.

Kinase. [The references to this are incomplete.]

Cond. of gelatin soln. containing kinase; 807, 808.

L.

Laccase. [The references to this are incomplete.]

κ at 17° of 0.9865 g in 50 cc. aq. = 4.485×10^{-3} ; 525.

Lactic acid. (α -Hydroxy-propionic acid).

$C_3H_5O_3 = Me.CH(OH).CO_2H$.

$k_A \times 10^4$ at 25° = 1.4; 1370, 1184; = 3.1; 657, and Ostwald, Zeit.

Phys. Chem. 32, 163, (1900), for a commercial preparation.

Relative strength (colorim. etc.); 693, 1643, 1781.

Cond.; 320a, 542, 1635, 1495. At 25°, $\mu(32) = 23.1$, (1024) = 109.7, (∞) = 358; 1370.

In HBr, no cond.; 30. In NH_3 , qual.; 606.

Cond. with boric acid; 1184. With GlO ; 320a. With MoO_3 ; 1495. With acetone; 1569. Under pressure of 1-260 atmospheres; 542.

Ca.2A; 1199. - Fe.2A in NH_3 , qual.; 606. - K.A; 1367. - Na.A at 25°, $\mu(32) = 69.6$, (1024) = 79.8; 1368a, 1367. Under pressure of 1-260 atmospheres; 542. - $UO_2.2A$; 449. - Zn.2A in NH_3 , qual.; 606.

Lactic acid cyanoamide. (Lactocyanoamide).

$C_4H_5O_2N_2 = Me.CH(OH).CO.NH(CN)$.

$k_A \times 10^7$ at 25° = 3; diminishes on diln.; decomposed?

$\mu(33.1) = 1.1$, (264.8) = 2.2, (∞) = 355; 70.

Lactic acid ethyl ester. $C_5H_{10}O_3$.

In NH_3 , qual.; 606.

Lactic acid nitrile. (Lactonitrile). $C_3H_5ON = Me.CH(OH)(CN)$.

$\kappa \times 10^6$ at -68° = 0.5. At -52° = 1.4. At -15° = 12; 1853a. At

0° = 0.18; 1844; = 24; 1853a. At 25° = 0.311; b. p. 83.9° @ 12-20 mm.; 1844, 1843; = 44; 1853a.

Cond. as solvent of NEt_4I ; 1844, 1853a.

Lactocyanoamide see **Lactic acid amide**.

Lactonitrile see **Lactic acid nitrile**.

Lactose. $C_{12}H_{22}O_{11}$.

α at 25° of 4.275 g (anhydrous) in 100 cc. aq. = 0.2218; **1747; 322.**

In NH_3 , qual.; **606.**

Cond. with organic and inorg. compounds; **1747.**

Laevulinic acid. (β -Acetopropionic acid).

$C_5H_8O_3 = MeCO.CH_2.CH_2.CO_2H$.

$k_A \times 10^5$ at 0° = 2.11; **701.** At 25° = 2.7; b. p. 150°–155° @ 10 mm.; **202; = 2.55; 1370; = 2.4; 701, 1186.** At 35.5° = 2.29; **701.**

Cond.; **701, 782.** At 25°, $\Lambda(32) = 9.9$, $(1024) = 52.5$, $(\infty) = 352$; **1370.**

In Et alc.; **782, 1185.**

Cond. with boric acid; **1186, 1185; qual.; 1184.**

Gl complex salt; **1711.** – Na.A, alteration of cond. by KOH; **495.**

Laevulose see **Fructose.**

iso-Launonic acid see **iso-Campholytic acid.**

Lauth's Violet see **Thionine.**

Lecithin. $C_{43}H_{84}O_9NP$ or $C_{43}H_{80}O_9NP$ or $C_{44}H_{80}O_{11}NP$.

Cond. of dil. soln. of lecithin from various sources; **1121.**

Lepidine. (4-Methyl quinoline). $C_{10}H_9N$.

B.HCl at 25°, $\Lambda(64) = 92.0$, $(256) = 95.9$; **270.**

Leucaniline see **Tri-p-aminotriphenyl-methane.**

Leucine see **Aminocaproic acid.**

Leuconic acid. $C_5H_8O_9$.

At 25°, $\mu(54.8) = 48.6$, $(1752.4) = 60.0$; **389.**

Leucotannic acid see **Tannic acid.**

Leucylaminoacetic acid. (Leucylglycine).

$C_8H_{16}O_4N_2 = C_4H_9.CH(NH_2)CO.NH.CH_2.CO_2H$.

$k_A \times 10^5$ at 25° = 1.5 (hydrol.).

$k_B \times 10^{11}$ at 25° = 3 (hydrol.); **519, 522.**

Cond. with NH_3 and HCl; **522.**

Lev- see **Laev-**

Limonene. (Carvene). $C_{10}H_{16}$.

$\alpha \times 10^7$ at 18° = 3.3; **386.**

In NH_3 , qual.; **606.** In SO_2 , little cond.; **1842.**

Cond. with organic compounds; **386.**

Linseed oil. [The references to this are incomplete.]

α ; **1010, 1471.**

Liver. [The references to this are incomplete.]

Cond.; **156a, 623 and 253.**

Concentration of H and OH ions in cell fluid; **587.**

Lung. [The references to this are incomplete.]

Cond.; **156a, 623 and 253.**

Lutidine see 2,6-Dimethyl-pyridine.

Lutidine-dicarboxylic acid see Dimethyl-pyridine-dicarboxylic acid.

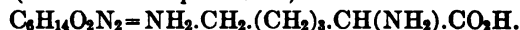
Lutidinic acid see Pyridine-2,4-dicarboxylic acid.

Lymph. [The references to this are incomplete.]

Cond.; 156a, 253, 258, 1137a, 1806.

Concentration of H and OH ions; 587.

Lysine. (α -Diamino-caproic acid).



$k_A \times 10^{11}$ at 25° is about 1 (hydrol.).

$k_B \times 10^7$ at 25° is less than 1 (hydrol.).

Second $k_B \times 10^{12} = 1.1$ (hydrol.); 948.

Cond.; 145b.

B.2HCl at 25°, $M(64) = 331.0$; $\mu(64) = 210.0$; 948. B.Carbonate; 145b.

M.

Magdala Red see Naphthalene Red.

Malamic acid see Malic acid mono amide.

Maleic acid. $\text{C}_4\text{H}_4\text{O}_4 = \text{CO}_2\text{H}\cdot\text{CH}:\text{CH}\cdot\text{CO}_2\text{H}.$

$k_A \times 10^2$ diminishes, then increases on diln. At 0° = 1.4; 1968a; 1018. At 12° = 1.45; 1968a. At 18° = 1.3; 460; - (colorim.); 1563, 1781. At 22° = 1.18 aq.; 164. At 25° = 1.3; 1372; = 1.54; 1968a; = 1.2; 1500b. At 35° = 1.51; 1968a.

Second $k_A \times 10^7 = 2.0$ (part.); 370; = 3.9 (inversion); 1638; = 5.5 (inversion); 1335; 2.6 (cond.); 370; = 80? (cond.); 1911.

Cond.; 170, 1500b, 1508, 1630, 1718, 1968a. At 25°, $\mu(32) = 168$, (1024) = 331, (∞) = 357; 1372. $\mu(32) = 175.4$, (1024) = 337.9; (∞) = 353; 1968a.

In HCl, good cond.; 30.

Cond. with inorg. and organic acids; 1630. With KOH and NaOH; 170, 1508, 1718. With aniline; 145a.

2(NH₄).A; 145a. - Gl complex salt; 1711. - Mg.A; 319, 1836. - K.A and 2K.A; 164. - 2Na.A at 25°, $\mu(32) = 90$, (1024) = 108; 370; - 270, 1837, 1838. Alteration of cond. by KOH; 495. - Na.A; 370. - Zn.A; 319.

Maleic acid anhydride. $\text{C}_4\text{H}_2\text{O}_3.$

$\kappa \times 10^5$ at 60° = 1.19; 1843.

Cond. of soln. showing change to acid; 1500b.

Maleic acid mono ethyl ester. $\text{C}_6\text{H}_8\text{O}_4 = \text{CO}_2\text{H}\cdot\text{CH}:\text{CH}\cdot\text{CO}_2\text{Et}.$

$k_A \times 10^8$ at 25° = 1.10. $\mu(51.0) = 74.9$, (816.0) = 212.0, (∞) = 354; 1859.

Malic acid. $\text{C}_4\text{H}_6\text{O}_5 = \text{CO}_2\text{H}\cdot\text{CH}_2\cdot\text{CH}(\text{OH})\cdot\text{CO}_2\text{H}.$ [Probably l-malic acid in all measurements.]

$k_A \times 10^4$ at $17^\circ = 3.83$ aq.; 164. At $25^\circ = 4.0$; m. p. 100° ; 1372, 1824, 1186; (colorim.); 1643, 1781.

Second $k_A \times 10^6 = 7.5$ (cond.); 1911.

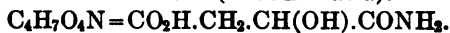
Cond.; 542, 691, 1495, 1518. At 25° , $\mu(32) = 37.9$, $(1024) = 166.6$ (∞) = 356; 1372.

In HBr and HCl, no cond.; 30. In NH_3 , qual.; 606. In Et alc.; 1185.

Cond. with boric acid; 1185, 1186; qual.; 1184. With MoO_3 ; 691, 1495, 1518. Under pressure of 1-260 atmospheres; 542.

Co.A; 1735. - Cu.A; 319. - Gl complex; 1521. - Mg.A; 1735, 1836. - Ni.A; 1735. - K.A; 164, 1648. - 2K.A; 164, 495, 588. - Na.A; 1838; qual.; 1643. - 2Na.A at 25° , $\Delta(32) = 82$, $(1024) = 100$; 270, 1838. Under pressure of 1-260 atmospheres; 542. - Complex salt; with MoO_3 and WO_3 ; 692; with ZrO_2 ; 1648.

l-Malic acid mono amide. (Malamic acid).



$k_A \times 10^4$ at $25^\circ = 2.86$; diminishes on diln.; m. p. 149° .

$\Delta(32) = 32.5$, $(1024) = 146.1$ (∞) = 356.

Na.A at 25° , $\Delta(32) = 67.1$, $(1024) = 76.5$; 1156.

l-Malic acid dimethyl ester. $C_6H_{10}O_5 = CO_2Me.CH_2.CH(OH).CO_2Me$.

$\kappa \times 10^7$ at $0^\circ = 2.98$; 1844. At $25^\circ = 5.45$; 1843, 1844, 1830.

In organic solvents; 1830.

As solvent of NEt_4I ; 1844.

inact.-Malic acid. $C_4H_6O_5 = CO_2H.CH_2.CH(OH).CO_2H$.

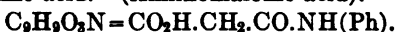
$k_A \times 10^4$ at $25^\circ = 4.0$; m. p. $130^\circ - 131^\circ$; 1824; 1372.

Second $k_A \times 10^6 = 8.3$ (inversion); 1638; = 5.5 (cond.); 1911.

Malic acid from Crassulaceae. $C_4H_6O_5$.

Na salt, $\mu(32) = 79.98$, $(1024) = 98.84$; 11.

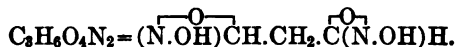
Malonanilic acid. (Anilinomalonic acid).



$k_A \times 10^4$ at $25^\circ = 1.96$.

$\Delta(64) = 37.1$, $(1024) = 126.3$, (∞) = 350; 1372.

Malondihydroxamic acid. (Malonhydroxamic acid).



$k_A \times 10^8$ at $25^\circ = 6$; increases on diln.

$\mu(32) = 0.5$, $(128) = 1.1$, (∞) = [400]; 1353a.

Malonic acid. $C_3H_4O_4 = CH_2(CO_2H)_2$.

k_A at 10° at $0^\circ = 1.48$; 1968a, 1887; = 1.36 aq.; 1018. At $4.9^\circ = 1.52$; 1968a. At $17^\circ = 1.64$ aq.; 164. At $18^\circ = 1.6$ (colorim.); 1563, 1781. At $25^\circ = 1.63$; m. p. $131^\circ - 132^\circ$; 1838, 1968a, 1968; = 1.58; 1371; = 1.71; 175. At $35^\circ = 1.63$; 1968a. Relative value; 1866.

Second $k_A \times 10^8 = 2.0$ (part. and cond.); **370**; -1.0 (inversion); **1638, 1335**; -10 (cond.); **1911**. Relative value; **1866**.

Cond.; **164, 171, 175, 370, 388a, 1018, 1371, 1887, 1968, 1968a**.

At 25° , $\mu(32) = 73.0$, $(1024) = 250.8$, $(\infty) = 358$; **1838**.

In HBr and HCl, no cond.; **30**. In N_2O_4 , no cond.; **602**. In Et alc.; **647, 1590a**.

Cond. with KOH; **171**. Under pressure, in alcohols; **1590a**. Under pressure at 0° ; **1708a**.

$2(NH_4).A$; **1126**. - $Ba.A$; **469**. - $2Cs.A$; **1126**. - $Ca.A$; **469**.

- $Co.A$; **1126, 1735**. - $Mg.A$; **1735, 1836**. - $Ni.A$; **1735**.

$K.A$; **164**. - $2K.A$; **164, 1126**. - $Na.A$; **1838, 370**. - $2Na.A$

at 25° , $\Delta(32) = 91.7$, $(1024) = 112$; **370**; **494, 1367, 1838**.

- $2Rb.A$; **1126**. - $Sr.A$; **469**. - "Double" salts; **1126**.

Malonic acid di-amide. (Malonyl amide). $C_3H_5O_2N_2$.

Hg salt, e. m. f.; **963**.

Malonic acid mono ethyl ester. $C_5H_8O_4 = CO_2H.CH_2.CO_2Et$.

$k_A \times 10^4$ at $25^\circ = 4.6$; increases, then diminishes on diln.

$\mu(17.1) = 30.3$, $(274.2) = 104.1$, $(\infty) = 356$; **1859**.

Malonic acid diethyl ester. $C_7H_{12}O_4 = CH_2(CO_2Et)_2$.

k_A at 25° is not very different from that of aq.; (hydrol.); **665**; -1.6×10^{-8} ; increases on diln.; **1815**.

Cond.; no cond. in aq.; **844, 1298**. [Cond. is probably due to sapon.] At 25° , $\mu(128) = 0.17$, $(256) = 0.15$; **1831**; - **1815**.

Effect of temperature on cond.; **106**.

In HBr, good cond.; **1897**. In NH_3 , qual.; **606**. In Et alc., little or no cond.; **1815, 1298**.

Malonic acid dimethyl ester. $C_5H_8O_4 = CH_2(CO_2Me)_2$.

$\kappa \times 10^7$ at $0^\circ = 0.794$. At $25^\circ = 1.20$; b. p. $181^\circ - 182^\circ$ @ 752 mm.; **1843, 1844**.

Cond. at 25° , $\Delta(64) = 0.49$, $(128) = 0.63$; **698**.

Cond. as solvent; **1844**.

Malonitrile. $C_3H_2N_2 = CH_2(CN)_2$.

At 25° , $\mu(64) = 0.37$; **698**.

Malonyl amide see **Malonic acid di-amide**.

Malonyl urea see **Barbituric acid**.

Maltose. $C_{12}H_{22}O_{11}$.

In NH_3 , qual.; **606**.

Cond. with potassium tartrate; **1468**.

Mandelic acid see **Phenylglycollic acid**.

Manganese cyanic acid. $C_6H_3N_6Mn = H_3Mn(CN)_6$.

$3K.A$ at 25° , $\Delta(32) = 126.3$, $(1024) = 143$; **1832**.

Mannide phosphoric acid see **Phosphoric acid mono mannide ester**.

Mannite see **Mannitol**.

d-Mannitol. (Mannite). $C_6H_{14}O_6 = CH_2OH.(CHOH)_4.CH_2OH$.

At 25°, $\mu(33.1) = 0.17$; **1518**. Also; **322, 944, 1434**. Cond. of satd. soln.; **1179, 1189**.

In HBr and H_2S , no cond.; **1897**. In NH_3 , qual.; **606**.

Cond. with boric acid; **944, 1179, 1183, 1189, 1316**. With MoO_3 ; **1518**. With inorg. salts; **748**. With oxalic acid; **45**.

Meconic acid. (Hydroxy-chelidonic acid).

$C_7H_4O_7 = C_6HO_2.(OH)(CO_2H)_2$.

At 25°, $\mu(32) = 413$, $(1024) = 664$; **1186; 1372**.

Cond. with boric acid; **1186**.

Meldola Blue. (β -Naphthol Violet. New Blue R). A salt of Dimethyl-phenonaphthoxazine. $C_{18}H_{16}ON_2$.

B.HCl at 25°, $\Lambda(64) = 78.1$, $(1024) = 92.0$; **741**.

Mellitic acid. $C_{12}H_6O_{12} = C_6(CO_2H)_6$.

Cond. at 10°; **164**. At 25°, $\mu(69.9) = 421.6$, $(1118.4) = 717.7$; **175**.

6K.A; **164**. - Na.A at 25°, $\mu(32) = 171$, $(1024) = 313$. - 2Na.A. - 3Na.A. - 4Na.A. - 5Na.A. - 6Na.A at 25°, $\mu(32) = 68$, $(1024) = 122$; **1838**.

Menthol. $C_{10}H_{20}O = C_{10}H_{19}.OH$.

In HCN, no cond.; **943**. In NH_3 , qual.; **606**.

l-Menthone. $C_{10}H_{18}O = C_9H_{18}.CO$.

Cond. in organic solvents; b. p. 81° @ 21 mm.; **1763**.

Menthyl amine. $C_{10}H_{21}N = C_{10}H_{19}.NH_2$.

B.HCl at 25°, $\Lambda(32) = 82.0$, $(1024) = 93.4$; **270**.

Mercury.

See compounds that follow; see also Trimercury-diacetone hydroxide. "Double" salts and complex salts, see; **149, 246, 604, 689, 785, 841, 907, 1008, 1094, 1379, 1485**.

Mercury cyanic acid. (Mercurocyanic acid).

$C_4H_2N_4Hg = H_2Hg(CN)_4$.

2K.A at 25°, $\Lambda(32) = 113.1$, $(1024) = 134.8$; **1832**; - **149, 907, 1485**.

Cond. with salts; **149**.

Mercury diethyl. $C_4H_{10}Hg = Hg.Et_2$.

In SO_2 , no cond.; **1842**.

Mercury ethyl chloride see under the hydroxide.

Mercury ethyl hydroxide. $C_2H_5OHg = Et.Hg.OH$.

At 25°, $\Lambda(64) = 1.7$; **425; 271**.

Cond. with NaOH; **425**.

B.Cl = Et.Hg.Cl; **1569**.

Mesaconanilic acid see Citraconanilic acid.

Mesaconic acid. $C_5H_8O_4 = CO_2H.CMe:CH.CO_2H$.

$k_A \times 10^4$; increases on diln. in all measurements. At 0° = 8.4; **1018, 1968a**. At 12° = 8.4; **1968a**. At 17° = 8.0 aq.; **164**.

At 18° = 8 (colorim.); **1563, 1781**. At 25° = 8.0; m. p.

201°–202°; **1372**, **1823**, **1831**, **1838**, **1968a**. At 35°=7.7; **1968a**.

Second $k_A \times 10^6 = 6.8$ (inversion); **1638**, **1335**;=9 (cond.); **1911**.

Cond.; **170**, **1968a**. At 25°, $\mu(32)=52.0$, $(1024)=209.8$, $(\infty)=[351]$; **1968a**. $\mu(48)=63$, $(\infty)=355$; **1372**.

In HCl, no cond.; **30**. In NH₃, qual.; **606**.

Cond. with KOH; **170**.

Mg.A; **1836**. – 2K.A; **170**. – 2Na.A at 25°, $\Lambda(32)=80.6$, $(1024)=96.6$; **270**; – **1823**, **1831**.

Mesitonic acid see **Dimethyl-laevulinic acid**.

Mesitylene. C₉H₁₂.

Insol. in NH₃; **606**.

Mesitylene mono-carboxylic acid see **2,4,6-Trimethyl-benzoic acid**.

Mesitylenedicarboxylic acid. (2,4,6-Trimethyl-m-phthalic acid).

C₁₁H₁₂O₄=Me₃.C₆H(CO₂H)₂. [CO₂H=2,4; Me=1,3,5.]

$k_A \times 10^4$ at 25°=9.8; diminishes on diln. $\mu(64)=82.3$, $(1024)=180.0$, $(\infty)=373$; m. p. 283° with dec.

2Na.A at 25°, $\mu(32)=70.1$, $(1024)=89.5$; **275**.

Mesitylenediglyoxylic acid.

C₁₃H₁₂O₆=Me₃.C₆H(CO.CO₂H)₂. [CO.CO₂H=2,4; Me=1,3,5.]

$k_A \times 10^2$ at 25°=5; diminishes on diln. $\mu(32)=260.2$, $(1024)=377.1$, $(\infty)=371$; m. p. not definite.

2Na.A at 25°, $\mu(32)=73.2$, $(1024)=89.4$; **275**.

Mesityleneglyoxylic acid. (Mesitylene-mono-glyoxylic acid. Trimethyl-benzoylformic acid).

C₁₁H₁₂O₃=Me₃.C₆H₂.CO.CO₂H. [CO.CO₂H=2; Me=1,3,5.]

$k_A \times 10^2$ at 25°=5.4; diminishes, then increases on diln. $\mu(32)=256.5$, $(256)=334.9$, $(1024)=359.0$, $(\infty)=360.7$; m. p. 115°.

Na.A at 25°, $\Lambda(32)=63.8$, $(1024)=80.3$; **275**.

Mesitylenic acid see **3,5-Dimethyl-benzoic acid**.

meso- see under letter beginning the next word, e. g. **Mesomethyl-** see **meso-Methyl-**

Mesoxalic acid. (Dihydroxy-malonic acid).

C₃H₄O₆=(OH)₂.C.(CO₂H)₂.

Cond. increased by boric acid; **1186**.

Metacetaldehyde see **Acetaldehyde**.

Metanilic acid see **m-Aniline sulphonic acid**.

Methacrylic acid. Polymeric. (Polymethacrylic acid).

C₂₂H₄₈O₁₆=(C₄H₈O₂)_x; x=7 or 8.

$k_A \times 10^6$ at 25°=3.4; diminishes on diln. $\mu(32)=3.6$, $(1024)=15.8$, $(\infty)=345$; dec. 200°–300° without melting.

Li salt. – K salt. – Na salt at 25°, $\mu(32)=32.9$, $(1024)=79.7$; **1273**.

Methane-disulphonic acid see **Methylene-disulphonic acid**.

Methanetricarboxylic acid triethyl ester. $C_{10}H_{16}O_6 = CH(CO_2Et)_3$.

Cond. very small; **1298**.

Methinetrithio-glycollic acid. $C_7H_{10}O_3S_3 = (CO_2H.CHSH)_3CH$.

$k_A \times 10^3$ [at 25°]=1; increases on diln. $\mu(32)=58.7$, $(512)=210$,
 $(\infty)=375$; m. p. 173° ; **850**.

Methoxy-acetic acid. (Glycollic acid methyl ether. Methyl-glycollic acid). $C_3H_6O_3 = CH_2.OMe.CO_2H$.

$k_A \times 10^4$ at $25^\circ=3.4$; aq. used for soln. was not pure.

$\Delta(32)=35.2$, $(1024)=151$, $(\infty)=358$; **1370**.

Na.A at 25° , $\Delta(32)=70.0$, $(1024)=81.6$; **1367**.

p-Methoxy-benzaldehyde see **Anisic aldehyde**.

o-Methoxy-benzene sulphonic acid amide. (o-Anisole sulphonic acid amide). $C_7H_9O_3NS = MeO.C_6H_4.SO_2NH_2$.

In NH_3 ; **607**, **610**.

m-Methoxy-benzene sulphonic acid amide. (m-Anisole sulphonic acid amide). $C_7H_9O_3NS$.

In NH_3 ; **604**, **607**, **610**.

p-Methoxy-benzene sulphonic acid amide. (p-Anisole sulphonic acid amide). $C_7H_9O_3NS$.

In NH_3 ; **607**, **610**.

o-Methoxy-benzoic acid. (Methylsalicylic acid).

$C_8H_8O_3 = MeO.C_6H_4.CO_2H$.

$k_A \times 10^5$ at $18^\circ=11$ (colorim.); **1563**. At $25^\circ=8.2$; increases, then diminishes on diln.; **1371**, **1429**.

At 25° , $\Delta(32)=17.5$, $(1024)=86.9$, $(\infty)=355$; **1371**.

Na.A at 25° , $\Delta(32)=69.7$, $(512)=79.1$; **1091**.

m-Methoxy-benzoic acid. $C_8H_8O_3$.

$k_A \times 10^5$ at $25^\circ=9.0$; diminishes on diln.; m. p. 95° and 106° .

$\Delta(256)=50.0$, $(1024)=92.1$, $(\infty)=355$; **1429**.

p-Methoxy-benzoic acid. (Anisic acid). $C_8H_8O_3$.

$k_A \times 10^5$ at $18^\circ=4.1$ (colorim.); **1563**, **1781**. At $25^\circ=3.2$; **1371**; =3.6; **1429**. At $50^\circ=3.2$ aq. At $60^\circ=3.1$ aq. At $70^\circ=3.0$ aq. At $80^\circ=2.8$ aq. At $90^\circ=2.6$ aq. At $99^\circ=3.6$ aq.; **1581**.

At 25° , $\Delta(512)=42.7$, $(1024)=58.1$, $(\infty)=355$; **1371**.

In NH_3 , qual.; **606**.

Na.A at 25° , $\Delta(32)=65.8$, $(1024)=75.2$; **1368a**. $\Delta(32)=69.7$; **1091**, **1581**.

3-Methoxy-6-chlorobenzoic acid.

$C_8H_7O_3Cl = MeO.C_6H_3Cl.CO_2H$. [$CO_2H=1$.]

$k_A \times 10^3$ at $25^\circ=1.36$; increases on diln.; m. p. 168° – 169° .

$\Delta(458)=190.5$, $(916)=232$, $(\infty)=354$; **404**.

- 4-Methoxy-dibenzal-acetone.** (Benzal-p-anisal-acetone). $C_{18}H_{16}O_2$.
Comparative strength (colorim.); m. p. 96.5° ; **74, 1663.**
- 4-Methoxy-dibenzal-cyclopentanone.** (Benzal-p-anisal-cyclopentanone). $C_{20}H_{18}O_2$.
Comparative strength (colorim.); m. p. 153° ; **1663.**
- iso-Methoxy-dibenzal-cyclopentanone.** (iso-Benzalanisal-cyclopentanone). $C_{20}H_{18}O_2$.
Comparative strength (colorim.); m. p. 147° ; **1663.**
- 2-Methoxy-3,5-dichloro-benzoic acid.** (Dichloro-salicylic acid).
 $C_8H_5O_2Cl_2 = MeO.C_6H_3Cl_2.CO_2H$.
 $k_A \times 10^3$ at $25^\circ = 1.37$; m. p. $166.5^\circ - 167^\circ$.
 $\Lambda(2170) = 279.7$, $(4340) = 309.2$, $(\infty) = 354$; **404.**
- o-Methoxy-phenyl urethane.** $C_{10}H_{12}O_2N = MeO.C_6H_4.NH.CO_2Et$.
At 25° , κ of satd. soln. $= 5.2 \times 10^{-4}$; **1660.**
- 4-Methoxy-m-phthalic acid.**
 $C_9H_8O_6 = MeO.C_6H_3(CO_2H)_2$. [$CO_2H = 1, 3$; $MeO = 4$.]
 $k_A \times 10^4$ at $25^\circ = 2.5$, extrapolated; m. p. 260° .
 $\mu(512) = 107.5$, $(1024) = 142.6$, $(\infty) = 352$; **1429.**
- 5-Methoxy-o-toluic acid.** (Methyl-m-homo-p-hydroxy-benzoic acid).
 $C_9H_{10}O_3 = MeO.C_6H_3Me.CO_2H$. [$Me = 1$; $CO_2H = 2$; $MeO = 5$.]
 $k_A \times 10^5$ at $25^\circ = 5.4$; diminishes on diln.
 $\Lambda(2048) = 98.8$, $(4096) = 128.6$, $(\infty) = 352$; **1429.**
- 4-Methoxy-m-toluic acid.** (Methyl-p-homo-o-hydroxy-benzoic acid).
 $C_9H_{10}O_3$. [$Me = 1$; $CO_2H = 3$; $MeO = 4$.]
 $k_A \times 10^5$ at $25^\circ = 6.8$.
 $\Lambda(128) = 31.2$, $(1024) = 81.2$, $(\infty) = 352$; **1429.**
- 6-Methoxy-m-toluic acid.** (Methyl-o-homo-p-hydroxy-benzoic acid).
 $C_9H_{10}O_3$. [$Me = 1$; $CO_2H = 3$; $MeO = 6$.]
 $k_A \times 10^5$ at $25^\circ = 3.48$; diminishes on diln.
 $\Lambda(2048) = 82.3$, $(4096) = 108.7$, $(\infty) = 352$; **1429.**
- 3-Methoxy-p-toluic acid.** (Methyl-m-homo-o-hydroxy-benzoic acid).
 $C_9H_{10}O_3$. [$Me = 1$; $CO_2H = 4$; $MeO = 3$.]
 $k_A \times 10^5$ at $25^\circ = 4.1$; diminishes on diln.; m. p. 103° .
 $\Lambda(256) = 34.4$, $(1024) = 65.1$, $(\infty) = 352$; **1429.**
- Methylacetoacetic acid ethyl ester.** $C_7H_{12}O_3 = MeCO.CHMe.CO_2Et$.
 k_A is between 10^{-11} and 10^{-12} (catal.); **1594.**
- β -Methyl- γ -acetylbutyric acid.**
 $C_7H_{12}O_3 = MeCO.CH_2.CHMe.CH_2.CO_2H$.
 $k_A \times 10^5$ at $25^\circ = 2.7$ aq.; b. p. 141° @ 15 mm.
 $\Lambda(31) = 10.8$, $(990.7) = 56.4$, $(\infty) = 374$; **1588.**
- Methylacridine.** $C_{14}H_{11}N$.
B.OH at 0° , $\Lambda(256) = 23$.
B.MeI; **763.**

Methylacridinium iodide. $C_{14}H_{12}NI$.

Cond. with NaOH; 763.

α -Methyladipic acid. $C_7H_{12}O_4=CO_2H.(CH_2)_3.CHMe.CO_2H$.

$k_A \times 10^5$ at $24.4^\circ=4.0$; increases on diln.; m. p. 63° .

$\mu(54.3)=15.8$, $(869)=62.6$, $(\infty)=352$; 1240.

Methyladipic acid see γ -Pimelic acid.

Methylal. $C_2H_5O_2$.

In NH_3 , qual.; 606.

Methyl alcohol. $CH_3O=Me.OH$.

$\kappa \times 10^6$ at $0^\circ=0.8$; 920; $=1.0$; 916, 918; - 906, 1651. At $17^\circ=1.3$; 289; 290. At $18^\circ=0.44$; 1724; $=1.2$; 1807; 362, 438, 580, 783, 787, 842, 1470. At $20^\circ=5.8$; 1590a. At $25^\circ=0.07$; 337; $=0.74$; 1844. Carefully purified methyl alcohol has $\kappa=1-2$. See also 335, 338, 347, 904, 905, 906, 908, 912, 913, 917, 918, 922, 941, 1388, 1390, 1423a, 1434a, 1579, 1580, 1592, 1620, 1746, 1843, 1987, 2029. At $35^\circ=1.0$; 1390. At $45^\circ=1.7$; 1434a. At critical point, qual.; 107; 133.

k_A is very small; qual.; 58. Relative basicity in organic solvents (colorim.); 1051. Concentration of OH ions; 343.

Cond.; 337.

In HBr; 29. In HBr, HCl and HI, good cond.; in H_2S , poor cond.; 1897. In HCN, no cond.; 943. In H_2SO_4 ; 750. In NH_3 , qual.; 606. In $MeNH_2$, little cond.; 637.

Cond. with other compounds; 45, 145b, 433, 748, 1035, 1388, 1724, 1746. As solvent; 82, 289, 290, (327), (331), 334, 335, (337), 338, 344, (347), 433, 438, (580), 746, (783), 787, 788, (842), (904), (912), (915), (916), (918), (920), 922, 923, (941), 958, (1025), (1026), 1263, 1286, 1386b, 1388, 1390, 1423a, 1434a, 1464, 1470, 1579, 1580, 1590a, (1592), 1620, 1624, (1651), 1724, 1746, 1759, 1807, 1844, 1848, 1849, 1853a, 2029. Under pressure; 1590a.

$NH_4.A.$ - K.A; 335. - Na.A at 18° , $\Delta(12)=32.5$, $(31)=40.8$, $(50)=43.7$, $(\infty)=94$ (?); 433; 335, 344, 1724.

Methyl aldoxime see Acetaldoxime.

Methylalloxan. $C_5H_4O_4N_2$.

At 25° , $\mu(32)=9.3$, $(1024)=18.8$; 1748.

α -Methylallylphenylbenzyl ammonium chloride.

$C_{17}H_{20}NCl=(Me)(C_2H_5)(Ph)(PhCH_2).NCl$.

At 25° , $\Delta(64)=92.9$, $(512)=102.2$; m. p. $152^\circ-154^\circ$; 1903.

meso-Methylallylsuccinic acid.

$C_8H_{12}O_4=CO_2H.CHMe.CH(C_2H_5).CO_2H$.

$k_A \times 10^4$ [at 25°]=2.34; diminishes on diln. $\mu(32)=29.1$, $(1024)=125.5$, $(\infty)=351$; m. p. $86^\circ-87^\circ$; 826.

p-Methylallylsuccinic acid. $C_8H_{12}O_4$.

$k_A \times 10^4$ [at 25°]=2.49; diminishes on diln. $\mu(32)=30$, (1024)=131.0, (∞)=351; m. p. 147° – 148° ; **826**.

Methyl amine. $CH_5N=MeNH_2$.

$\alpha \times 10^7$ [at 20° ?]=7; **605**.

$k_B \times 10^4$ at $25^\circ=5$ aq.; diminishes on diln.; about 16% too high; **271**;=4.1 (neutral.); **299a**. Relative strength; **1631**.

Cond.; **299a**. At 25° , $\Delta(32)=27.0$, (256)=65.4, (∞)=225; **271**.

In NH_3 , qual.; **606**.

Cond. with HCl; **299a**. With AgO; **510**, **520**. With succinimide; **1752**. As solvent; (**520**), **605**, **637**.

B.HCl at 25° , $\Delta(32)=113.4$, (1024)=125.1; **270**. In NH_4OH ; **650**. In SO_2 ; **1829**, **1855**. – Complex salts; **1750**, **1752**, **1755**.

Methylamino-acetic acid. (Methylglycine. Sarcosine).

$C_2H_7O_2N=NHMe.CH_2.CO_2H$.

$k_A \times 10^{10}$ at $25^\circ=1.3$ (hydrol.); **1984**.

$k_B \times 10^{12}$ at $25^\circ=1.8$ (hydrol.); **1984**; **890**, **1150**; (colorim.); **1775**.

At 25° , $\Delta(914)=228.6$, (∞)=350; **601**.

In NH_3 , qual.; **606**.

Na.A at 25° , $\Delta(32)=68.0$, (1024)=82.6; M(32)=76.1, (1024)=111. – B.HCl at 25° , $\Delta(32)=102$, (1024)=113; M(32)=199, (1024)=366; **1984**.

o-Methylamino-benzoic acid. (N-Methylantranilic acid).

$C_8H_9O_2N=NHMe.C_6H_4.CO_2H$.

$k_A \times 10^6$ at $25^\circ=4.6$.

$k_B \times 10^{13}$ at $25^\circ=9.4$ (catal.).

At 25° , $\Delta(775)=21.1$, (1025)=24.9, (∞)=378.

Na.A at 25° , $\Delta(32)=68.9$, (1024)=78.4; **414**.

o-Methylamino-benzoic acid methyl ester. (N-Methylantranilic acid methyl ester). $C_9H_{11}O_2N=NHMe.C_6H_4.CO_2Me$.

$k_B \times 10^{11}$ at $25^\circ=3.36$ (catal.); **414**.

m-Methylamino-benzoic acid. $C_8H_9O_2N=NHMe.C_6H_4.CO_2H$.

$k_A \times 10^6$ at $25^\circ=8$ (catal.);=6.7 (cond.); m. p. 147° .

$k_B \times 10^{11}$ at 25° is about 1.2 (catal.).

At 25° , $\Delta(82)=7.5$, (1312)=31.8, (∞)=377.

Na.A at 25° , $\Delta(32)=69.9$, (1024)=79.7; **414**.

p-Methylamino-benzoic acid. $C_8H_9O_2N=NHMe.C_6H_4.CO_2H$.

$k_A \times 10^6$ at $25^\circ=9.2$ (catal.);=8.8 aq. (cond.); m. p. 144° – 145° .

$k_B \times 10^{12}$ at $25^\circ=1.66$ (catal.).

At 25° , $\Delta(128)=10.2$, (1024)=34.1, (∞)=377.

Na.A at 25° , $\Delta(32)=68.3$, (1024)=80.7; **890**.

p-Methylamino-benzoic acid methyl ester. $C_9H_{11}O_2N$.

$k_B \times 10^{12}$ at $25^\circ=2.0$ (part.); m. p. 75° – 76° ; **890**.

4-Methyl-2-aminophenyl ethyl carbonate.
 $k_B \times 10^{11}$ at $0^\circ = 1.23$ (hydrol.).

 B.HCl at 0° , $\mu(32) = 42.6$; $M(32) = 73.5$. Cond. on standing;
 m. p. 135° – 137° dec.; 1660.
5-Methyl-2-aminophenyl ethyl carbonate. $\text{C}_{10}\text{H}_{13}\text{O}_3\text{N}$.
 $k_B \times 10^{11}$ at $0^\circ = 2.16$ (hydrol.).

 B.HCl at 0° , $\mu(32) = 42.6$; $M(32) = 69.1$. Cond. on standing;
 1660.
6-Methyl-2-aminophenyl ethyl carbonate. $\text{C}_{10}\text{H}_{13}\text{O}_3\text{N}$.
 $k_B \times 10^{11}$ at $0^\circ = 1.05$ (hydrol.).

 B.HCl at 0° , $\mu(32) = 42.6$; $M(32) = 78.5$; 1660.
2-N-Methylamino-p-phthalic acid.
 $k_A \times 10^4 = 3$; m. p. 277° – 279° ; 1684. In 316 it is stated that this
 acid contained some dimethyl-amino-p-phthalic acid, and
 that k_A of the pure acid is a little smaller. No figures are
 given.

 $\mu(610) = 130$, $(1200) = 171.2$, $(\infty) = 376$; 1684.

Methylaminonium acetate see Acetic acid; organic salts.

Methylaminonium hippurate see Benzoylamino-acetic acid; salts.

Methylaminonium phenylacetate see Phenylacetic acid; salts.

 Methyl-iso-amyl-dimethylamino-methyl carbinol benzoate. (*iso*-
 Amyl stavaine derivative).

 $k_B \times 10^7$ at 15° is about 1 (hydrol.); 1777, 1779.
cis- α -Methyl- α' -iso-amyl-succinic acid.
 $k_A \times 10^4$ at $25^\circ = 3.85$; m. p. 93° .

 $\mu(52.3) = 46.3$, $(418.4) = 115$, $(\infty) = [351]$; 236.
trans- α -Methyl- α' -iso-amyl-succinic acid. $\text{C}_{10}\text{H}_{18}\text{O}_4$.
 $k_A \times 10^4$ at $25^\circ = 2.36$; m. p. 141° – 142° .

 $\mu(183.4) = 65.6$, $(1467.2) = 154.7$, $(\infty) = [351]$; 236.
Methylaniline. $\text{C}_7\text{H}_7\text{N} = \text{Ph} \cdot \text{NHMe}$.
 $k_B \times 10^{10}$ at $18^\circ = 2.55$ (colorim.); 1777. At $60^\circ = 74$ (inversion);
 1880.

 In HCl and HBr, good cond.; in H_2S , no cond.; 1897. In ben-
 zene, no cond.; 1802.

 Cond. with acetic acid; 1011. With allyl thiocarbimide, no
 cond.; 1223. With picric acid; 1802. As solvent; 1552a.

 B.HCl at 25° , $\Lambda(64) = 95.0$, $(256) = 99.4$; 270; 1864. – $\text{B} \cdot \text{H}_2\text{SO}_4$;
 1864.
1-Methylaniline-4-sulphonic acid.

$k_A \times 10^4$ at $25^\circ = 6.66$.

$\Delta(128) = 89.4$, $(1024) = 195.5$, $(\infty) = 354$; **492**.

Methylantranilic acid see **o-Methylamino-benzoic acid**.

Methyl arsenic acid. (Mono methyl arsenic acid. Methyl arsonic acid). $\text{CH}_3\text{O}_2\text{As} = \text{Me.AsO}(\text{OH})_2$.

$k_A \times 10^4$ at 25° is about 1; **2009**.

Cond. alone and with MoO_3 ; **1269**.

Methyl arsonic acid, see **Methyl arsenic acid**.

Methylbenzenyl-amino-thio-xylene-azo- α -naphthol disulphonic acid see **Erika B**.

α -Methyl-m-benzimideazolecarboxylic acid. (*meso*-Methylphenmiazolemonocarboxylic acid). $\text{C}_9\text{H}_8\text{O}_2\text{N}_2$.

$k_A \times 10^6$ at $25^\circ = 1.0$.

$\mu(760.7) = 9.6$, $(1521.4) = 13.5$, $(\infty) = 350$; **70**.

m-Methyl- α -benzimidazolecarboxylic acid. $\text{C}_9\text{H}_8\text{O}_2\text{N}_2$.

$k_A \times 10^6$ [at 25°] = 1.1; m. p. 143° slowly heated; **80**.

Methylbenzoylamino-acetic acid. (Benzoylsarcosine).

$\text{C}_{10}\text{H}_{11}\text{O}_2\text{N} = \text{PhCO.NMe.CH}_2\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ = 5.05$.

$\mu(64) = 57.6$, $(1024) = 175.6$, $(\infty) = 350$; **601**.

2-Methylbenzoyl amino-propionic acid. (*o*-Alaninetoluric acid).

$\text{C}_{11}\text{H}_{13}\text{O}_2\text{N} = \text{MeC}_6\text{H}_4\text{CO.NH.CHMe.CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ = 1.65$.

$\mu(411.4) = 80$, $(1645.6) = 141.3$, $(\infty) = 350$; **601**.

4-Methylbenzoyl amino-propionic acid. (*p*-Alaninetoluric acid).

$\text{C}_{11}\text{H}_{13}\text{O}_2\text{N}$.

$k_A \times 10^4$ at $25^\circ = 1.70$; diminishes on diln.

$\mu(408.5) = 81.1$, $(1634.0) = 141.5$, $(\infty) = 350$; **601**.

Methylbenzylcarboxylglutaric acid see **Benzyl-iso-butenyltricarboxylic acid**.

Methylbenzylglutaric acid. $\text{C}_{13}\text{H}_{16}\text{O}_4$.

$k_A \times 10^5$ at $25^\circ = 5.9$; m. p. 128° – 130° ; called dimethyl-benzylsuccinic acid, with some doubt as to real structure.

$\mu(32) = 14.5$, $(512) = 55.7$, $(\infty) = 350$; **201**.

Methylbenzylmalonic acid. $\text{C}_{11}\text{H}_{12}\text{O}_4 = (\text{Me})(\text{PhCH}_2)\text{C}(\text{CO}_2\text{H})_2$.

$k_A \times 10^3$ at $25^\circ = 2.66$ aq.; diminishes on diln.; m. p. 138° .

Second $k_A \times 10^7 = 1.2$ (inversion).

At 25° , $\mu(64) = 117.9$, $(1024) = 265.9$, $(\infty) = 351$; **1638**.

meso-sym.-Methylbenzylsuccinic acid.

$\text{C}_{12}\text{H}_{14}\text{O}_4 = \text{CO}_2\text{H.CHMe.CH}(\text{PhCH}_2).\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ = 2.47$; increases, then diminishes on diln.; m. p. 137° – 138° ; **201**, **1838**.

$\mu(32) = 29.7$, $(512) = 103.4$, $(\infty) = 350$; **1838**.

p-sym.-Methylbenzylsuccinic acid. $C_{12}H_{14}O_4$.

$k_A \times 10^4$ at $25^\circ = 2.18$; increases on diln.; m. p. 159° – 160° ; **201**, **1838**.

$\mu(32) = 27.8$, $(512) = 99.1$, $(\infty) = 350$; **1838**.

Methyl-bromo-uracil. $C_5H_5O_2N_2Br$.

$k_A \times 10^8$ at $25^\circ = 2.6$.

$\mu(512) = 1.3$, $(1024) = 1.8$; **1748**.

cis-aa'-Methyl-iso-butyl-succinic acid.

$C_9H_{16}O_4 = CO_2H.CHMe.CH(iso-Bu).CO_2H$.

$k_A \times 10^4$ at $25^\circ = 4.27$; diminishes on diln.; m. p. 88° – 90° .

$\mu(34.5) = 40.1$, $(276.0) = 101.0$, $(\infty) = [351]$; **236**.

trans-aa'-Methyl-iso-butyl-succinic acid. $C_9H_{16}O_4$.

$k_A \times 10^4$ at $25^\circ = 2.36$; diminishes on diln.; m. p. 133° .

$\mu(88.9) = 47.3$, $(711.2) = 116.1$, $(\infty) = [351]$; **236**.

N-Methylchloroglyoxaline. $C_4H_5N_2Cl$.

$k_B \times 10^8$ at $25^\circ = 1.7$.

$\mu(32) = 0.16$, $(128) = 0.35$, $(\infty) = 222.4$; **428**.

Methyl-chloro-uracil. $C_5H_5O_2N_2Cl$.

$k_A \times 10^8$ at $25^\circ = 3.3$.

$\mu(512) = 1.5$, $(1024) = 2.0$; **1748**.

Methylcitraconanilic acid. (Ethylmaleinanilic acid). $C_{12}H_{13}O_3N$.

NH_4A , $\Lambda(33.0) = 47.0$, $(1056.6) = 64.8$; (the free acid has m. p. 106° – 107°); **1749**.

Methylcitraconic acid see **Ethylmaleic acid**.

1-Methylcyclohexane-3-acetic acid. $C_9H_{16}O_2$.

$k_A \times 10^5$ [at 25°] = 1.59.

$\mu(190.3) = 19$, $(1522.4) = 50$, $(\infty) = 352$; **2026**.

1-Methylcyclohexane-1-carboxylic acid. $C_8H_{14}O_2$.

$k_A \times 10^6$ [at 25°] = 6.9.

$\mu(126.7) = 10.2$, $(1013.8) = 28.2$, $(\infty) = 352$; **2026**.

cis-1-Methylcyclohexane-2-carboxylic acid. (*cis*-Hexahydro-o-toluic acid). $C_8H_{14}O_2$.

$k_A \times 10^5$ [at 25°] = 1.64.

$\mu(193.2) = 19.3$, $(1545.6) = 53.5$, $(\infty) = 352$; **2026**.

trans-1-Methylcyclohexane-2-carboxylic acid. (*trans*-Hexahydro-o-toluic acid). $C_8H_{14}O_2$.

$k_A \times 10^5$ [at 25°] = 2.05; m. p. 50° – 51° .

$\mu(48.3) = 10.8$, $(1545.6) = 58.8$, $(\infty) = 352$; **2026**.

1-Methylcyclohexane-3-carboxylic acid. (Hexahydro-m-toluic acid).

$C_8H_{14}O_2$.

$k_A \times 10^5$ [at 25°] = 1.28.

$\mu(57.7) = 9.4$, $(923.5) = 35.4$, $(\infty) = 352$; **2026**.

1-Methylcyclohexane-4-carboxylic acid. (Hexahydro-p-toluic acid).

$C_8H_{14}O_2$.

$k_A \times 10^5$ [at 25°] = 1.11.

$\mu(209.5) = 16.5$, $(1676.3) = 45.3$, $(\infty) = 352$; **2026**.

1-Methylcyclopentane-3-carboxylic acid see **1-Methylpentamethylene-2-carboxylic acid**.

3-Methyl-desoxyxanthine see **3-Methyl-2-oxy-1,6-dihydro-purine**.

Methyldiethyl-amine. $C_8H_{18}N = Me.N.Et_2$.

$k_B \times 10^4$ at 25° = 2.7 aq.; about 16% too high.

$\Delta(32) = 18$, $(256) = 46.2$, $(\infty) = 203$; **271**.

B.HCl at 25°, $\Delta(32) = 91.7$, $(1024) = 103.2$; **270**.

m-Methyldihydro-resorcinol. $C_7H_{10}O_2$.

$k_A \times 10^6$ at 25° = 5.7 aq.

$\Delta(33.2) = 5.1$, $(1031) = 27.9$, $(\infty) = 376$; **1588**.

4-Methyl-1,2-dihydroxy-1,2,5-triazole 3-carboxylic acid ethyl ester.

(Dihydroxy-triazolidine-acetic acid ethyl ester. Methyl-dihydroxy-triazolidine-carboxylic acid ethyl ester).

$C_8H_{11}O_4N_3$.

$k_A \times 10^3$ at 18° = 6.17; m. p. 70°–71°.

At 18°, $\Delta(23.8) = 108.2$, $(119.2) = 193$, $(\infty) = 340$; **527**.

Methyl-dihydroxy-triazolidine see **Methyl-dihydroxy-triazole**.

Methyldiphenyl amine. $C_{12}H_{12}N$.

In NH_3 , qual.; **606**.

Methylene Blue see **Tetramethyl-thionine chloride**.

Methylenecyclopropane amine. (Ethylene-ethyl amine).

$C_4H_9N = (C_3H_5.CH_2)NH_2$.

$k_B \times 10^4$ at 25° = 4.4; b. p. 86° (in vapor.)

$\mu(29.4) = 21.7$, $(471) = 74$, $(\infty) = 204$; **420**.

Methylene-dihydro-benzoic acid see **iso-Phenylacetic acid**.

Methylene di-hydroresorcinol. $C_{12}H_{16}O_4$.

Too insol. in aq. to measure, therefore k_A is less than that of dihydroresorcinol, $(= 5.5 \times 10^{-6})$; m. p. 132°; **1816**.

Methylene-dimethyl-succinic acid.

$C_7H_{10}O_4 = CO_2H.Me_2C.C(:CH_2).CO_2H$.

$k_A \times 10^4$ at 25° = 1.67; m. p. 142.5°.

$\mu(20) = 19.7$, $(80) = 38.5$, $(\infty) = 352$; **229**.

Methylene-disulphonic acid. (Methane-disulphonic acid).

$CH_4O_6S_2 = CH_2(SO_3H)_2$.

2Na.A at 25°, $\mu(32) = 92.7$, $(1024) = 117.5$; **1367**.

Methylenedi-thioglycollic acid. $C_6H_8O_4S_2 = (CO_2H.CHSH)_2.CH_2$.

$k_A \times 10^4$ [at 25°] = 4.67; increases on diln. $\mu(32) = 43.6$, $(512) = 158.2$, $(\infty) = 378$; m. p. 128.5°–129° (uncor.); **856**.

α -Methyleneglutaric acid. $C_6H_8O_4 = CO_2H.C(:CH_2).(CH_2)_2.CO_2H$.

$k_A \times 10^5$ at 25° = 6.7; increases on diln.; m. p. 130°–131°.

$\Delta(32) = 17.0$, $(1024) = 86.8$, $[(\infty) \text{ is about } 380]$.

2Na.A at 25°, $\Delta(32) = 84.5$, $(1024) = 101.9$; **565**.

γ -Methylene- γ -phenylpyrotartaric acid. (Methylphenylaticonic acid).



$k_A \times 10^4$ [at 25°] = 1.95; m. p. 152° – 154° .

$\mu(63.8) = 36.8$, (1021) = 124.6, $(\infty) = 350$; 1661, 817.

Methylethylacetic acid. $\text{C}_6\text{H}_{10}\text{O}_2 = (\text{Me})(\text{Et})\text{CH}.\text{CO}_2\text{H}.$

$k_A \times 10^5$ at $25^\circ = 1.69$; b. p. 175° ; 180, 1840.

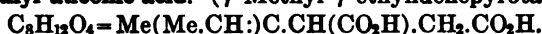
$\Delta(32) = 8.3$, (1024) = 43.6, $(\infty) = 352$; 1840.

Methylethylacrylic acid see α -Methyl- α,β -pentenoic acid.

Methylethylaniline. $\text{C}_9\text{H}_{11}\text{N} = \text{Ph}.\text{N}(\text{Me})(\text{Et}).$

B.HCl at 25° , $\Delta(64) = 90.2$, (256) = 94.9; 270.

Methylethyl-aticonic acid. (γ -Methyl- γ -ethylidenepyrotartaric acid).



$k_A \times 10^4$ [at 25°] = 1.12; m. p. 140° – 141° .

$\mu(45.7) = 24.2$, (1462) = 114.9, $(\infty) = 351$; 1662.

Methylethylcarbinamine see *secondary*-Butyl amine.

Methylethylcarboxylglutaric acid.



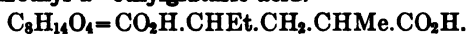
$k_A \times 10^3$ at $25^\circ = 9.74$; m. p. 166° .

$\mu(32) = 148.4$, (1024) = 324, $(\infty) = 350$; 1839.

Methylethyl-dimethylamino-methyl carbinol benzoate. (B.HCl is Stovaine). $\text{C}_{14}\text{H}_{21}\text{O}_2\text{N} = \text{PhOCO}.\text{C}(\text{Me})(\text{Et}).\text{CH}_2.\text{NMe}_2.$

$k_B \times 10^7$ at $15^\circ = 1.5$ (hydrol.); 1779; 1777.

meso- α -Methyl- α' -ethylglutaric acid.



$k_A \times 10^5$ at $25^\circ = 5.6$; m. p. 63° – 67° ; 189, 201, 1838. [Called also, dimethyl-N-ethylsuccinic acid in 201.]

$\mu(32) = 14.4$, (1024) = 73.2, $(\infty) = 351$; 1838.

β -Methyl- α -ethylglutaric acid.



$k_A \times 10^5$ [at 25° ?] = 6.7; m. p. 100° – 101° ; 1398. [? same as dimethyl-H-ethylsuccinic acid, $k_A = 5.9$; m. p. 105° . $\mu(32) = 14.9$, (512) = 54, $(\infty) = 351$; 201.]

Methylethyl glyoxime. $\text{C}_6\text{H}_{10}\text{O}_2\text{N}_2.$

Co complex salt; 1759.

Methylethylidene-glutaric acid see Dicrotonic acid.

Methylethylidenepyrotartaric acid see Methylethyl-aticonic acid.

Methylethyl-itaconic acid. $\text{C}_8\text{H}_{12}\text{O}_4 = \text{MeEtC}:\text{C}(\text{CO}_2\text{H}).\text{CH}_2.\text{CO}_2\text{H}.$

$k_A \times 10^4$ at $25^\circ = 1.50$ aq.; diminishes on diln.; m. p. 179° – 181° dec.; 1638, 1662.

Second $k_A \times 10^7 = 4.6$ (inversion).

At 25° , $\mu(139.4) = 47$, (1115) = 116.3, $(\infty) = 351$; 1638.

Methylethyl ketone. $\text{C}_4\text{H}_8\text{O} = \text{Me}.\text{CO}.\text{Et}.$

$\kappa \times 10^7$ at $25^\circ = 1.0$; 1423a; = 3.07; 1323.

Cond. as solvent; 474, 1106, 1107, (1323), 1423a.

Methylethylmaleic acid. $C_7H_{10}O_4 = CO_2H.CMe:CEt.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 9.7$ from soln. of the anhydride in aq. Apparently polymerizes in soln. as shown by small cond.
 $\mu(128) = 37$, $(1024) = 94$; **1838, 1030.**

Methylethylmaleic anhydride. $C_7H_8O_3$.

See the acid.

Methylethylmalonic acid. $C_8H_{10}O_4 = (Me)(Et)C(CO_2H)_2$.

$k_A \times 10^3$ at $18^\circ = 1.6$; **1563.** At $25^\circ = 1.61$; m. p. $118^\circ - 119^\circ$; **1838, 175.**

Second $k_A \times 10^7 = 1.7$ (inversion); **1638.**

At 25° , $\mu(32) = 71.8$, $(1024) = 248$, $(\infty) = 355$; **1838.**

asym.-Methylethylsuccinic acid see *iso*-Pimelic acid.

fum.-*sym.*-Methylethylsuccinic acid. (β , or *h*-, or *p*- acid).

$C_7H_{12}O_4 = CO_2H.CHMe.CHEt.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.10$; m. p. varies from 169° to 180° ; pure acid has m. p. 180° ; **61, 62, 175, 200, 1418, 1838.**

At 25° , $\mu(32) = 27.5$, $(1024) = 126.4$, $(\infty) = 352$; **1838.**

mal.-*sym.*-Methylethylsuccinic acid. (α , or *meso*-, or *n*- acid).

$C_7H_{12}O_4$.

$k_A \times 10^4$ at $25^\circ = 2.10$; m. p. varies from 84° to 101° ; pure acid has m. p. $101^\circ - 102^\circ$; **62, 175, 201, 1418, 1838.** - **61.**

At 25° , $\mu(32) = 27.1$, $(512) = 95.3$, $(\infty) = 352$; **1838.**

cis- β -Methylglutaconic acid. $C_6H_8O_4 = CO_2H.CH:CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.3$; diminishes on diln.; m. p. 152° .

$\mu(32) = 22.9$, $(1024) = 110$; **572.**

trans- β -Methylglutaconic acid. $C_6H_8O_4$.

$k_A \times 10^4$ at $25^\circ = 1.4$; increases, then diminishes on diln.; m. p. 116° .

$\mu(32) = 24.4$, $(1024) = 116.5$; **572.**

α -Methylglutaric acid. $C_6H_{10}O_4 = CO_2H.(CH_2)_2.CHMe.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 5.4$; m. p. $77^\circ - 78^\circ$; **175, 197, 503, 1240, 1838.**

At 25° , $\mu(32) = 14.1$, $(512) = 52.2$, $(\infty) = 352$; **1838.**

β -Methylglutaric acid. $C_6H_{10}O_4 = MeCH(CH_2.CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 5.9$; increases on diln.; m. p. $85^\circ - 86^\circ$.

At 25° , $\mu(32) = 15$, $(512) = 58.3$, $(\infty) = 352$; **1838.**

Methylglycine see Methylaminoacetic acid.

Methyl-glycollic acid see Methoxy-acetic acid.

α -Methyl glyoxaline. (4-or 5-Methylimideazole). $C_4H_6N_2$.

$k_B \times 10^7$ at 18° is more than 1 (colorim.); **1776.** [At 25°] = 4.1; m. p. 56° ; **428.**

Second $k_B \times 10^{10} = 2.8$ (colorim.); **1776.**

[At 25°] $\mu(32) = 0.9$, $(1024) = 5.3$, $(\infty) = 229.7$; **428.**

B. HNO_3 [at 25°] $\Lambda(32) = 97.8$, $(1024) = 110.6$; **428.**

μ -Methyl glyoxaline. (2-Methylimideazole). $C_4H_6N_2$.

$k_B \times 10^6$ [at 25°]=1.3; m. p. 139° .

$\mu(32)=1.5$, (1024)=10.2, (∞)=224.2.

B.HNO₃ [at 25°], $\Delta(32)=90.6$, (1024)=103.8; **428**.

N-Methyl glyoxaline. (1-Methylimideazole). $C_4H_6N_2$.

$k_B \times 10^7$ [at 25°]=2.1; b. p. 198° .

$\mu(32)=0.6$, (1024)=7, (∞)=229.7.

B.Picrate [at 25°], $\Delta(128)=68.9$, (1024)=75.7; **428**.

Methylglyoximecarboxylic acid see **Dioximino-butyric acid**.

Methylguanidine-acetic acid. (Creatine).

$C_4H_9O_2N_3=NH:C(NH_2).NMe.CH_2.CO_2H$.

$k_B \times 10^{11}$ at $40^\circ=1.87$ (catal.); **1995** and **1150**. At $40.2^\circ=1.81$ (catal.); **1995**.

In NH_3 , qual.; **606**.

Cond. with HCl; **1318**.

Methyl-homo-hydroxy-benzoic acid see **Methoxy-toluic acid**.

Methylhydroresorcylic acid ethyl ester.

$C_{10}H_{14}O_4=C_7H_9O(OH).CO_2Et$.

$k_A \times 10^5$ at $25^\circ=3.7$ aq.; increases, then diminishes on diln.; m. p. $89^\circ-90^\circ$.

$\Delta(32.1)=12.6$, (1026)=64.9, (∞)=372; **1538**.

3-Methyl-6-hydroxy-phenyl urethane.

$C_{10}H_{13}O_3N=HO.C_6H_3.Me.NH.CO_2Et$.

At 25° , κ of satd. soln.= 5.2×10^{-4} ; m. p. 101° .

With HCl, no change of cond.; **1660**.

4-Methyl-1-hydroxy-1,2,5-triazole 3-carboxylic acid. (Hydroxy-triazolin acetic acid. Methylhydroxytriazolidine carboxylic acid.) $C_4H_5O_3N_3$.

$k_A \times 10^3$ at $21.5^\circ=6.1$; diminishes on diln.; m. p. $184^\circ-185^\circ$.

$\Delta(29.8)=122$, (297.7)=252, (∞)=353; **527**.

Methyl-hydroxy-triazolidine see **Methyl-hydroxy-triazole**.

Methylimideazole see **Methyl glyoxaline**.

Methylimino-uracil. $C_8H_7ON_3$.

$k_A \times 10^3$ at $25^\circ=3.8$.

$\mu(128)=0.8$, (1024)=2.2; **1748**.

2-Methylindole-3-acetic acid. $C_{11}H_{11}O_2N$.

$k_A \times 10^5$ at $25^\circ=2.18$ aq.; diminishes on diln.; m. p. $195^\circ-200^\circ$ dec.

$\Delta(270)=25.9$, (1080)=49, (∞)=350; **23**.

Pr-2-Methyl-indole-2-carboxylic acid. (α -Methyl- β -indole etc.).

$C_{10}H_9O_2N$.

$k_A \times 10^6$ at $25^\circ=1.3$ aq.; m. p. $176^\circ-177^\circ$.

$\Delta(1124)=12.9$, (2248)=17.9, (∞)=351; **23**.

3-Methyl-indole-3-carboxylic acid. (β -Methyl- α -indole etc. β -Skatole-carboxylic acid). $C_{10}H_9O_2N$.

$k_A \times 10^5$ at $25^\circ = 4.7$ aq.; m. p. 167° .

$\mu(453.6) = 47.7$, $(907.2) = 65.7$, $(\infty) = 351$; **23**.

Methyl iodide. (Iodomethane). CH_3I .

$\kappa \times 10^7$ at 25° is less than 0.2; b. p. 41° – 43° @ 743 mm.; **1388**; = 1.3; **1569**.

In NH_3 , qual.; **606**. In SO_2 , no cond.; **1842**.

Cond. with organic compounds; **1388**, **1569**, **1855**. With $AlCl_3$; **1893**.

Methylisoxazalone see β -Oximinobutyric acid anhydride.

Methylitaconic acid. $C_6H_8O_4 = MeCH:C(CO_2H).CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 9.5$; diminishes on diln. $\mu(32) = 19.0$, $(1024) = 91$, $(\infty) = 354$; m. p. 166° – 167° ; **191**, **509**, **1838**.

Methyl-laevalinic acid see Aceto-*iso*-butyric acid.

Methyltitidinium chloride. $C_8H_{12}NCl = C_7H_9N.MeCl$.

At 25° , $\Lambda(32) = 90.8$, $(1024) = 103.0$; **270**.

Methylmaleinanilic acid see Citraconanilic acid.

Methylmalonic acid see *iso*-Succinic acid.

Methylmesaconic acid see Ethylfumaric acid.

Methylmorphine see Methylmorphinium hydroxide.

Methylmorphinium hydroxide. (Methylmorphine. Morphine methylhydroxide). $C_{18}H_{22}O_4N = C_{17}H_{19}O_3N.MeOH$.

0.05 normal soln., μ is about 5; **705**.

B.Cl ($= C_{17}H_{19}O_3N.MeCl$) at 25° , $\Lambda(32) = 79.2$, $(1024) = 91.7$; **270**.

Methyl nitrate see Nitric acid methyl ester.

Methylnitroamine. $CH_4O_2N_2 = Me.NH(NO_2)$.

$k_A \times 10^7$ at $0^\circ = 3$; **733**. At $25^\circ = 7$; **733**, **757**. At 35° or $40^\circ = 8$; **733**.

Cond.; **1094**. At 25° , $\mu(64) = 2.2$; **782**.

In NH_3 ; **610**. In pyridine; **754**. In Et alc.; **754**, **782**.

Hg.A; **1094**.

Methylnitronium iodide. (Nitron methoiodide).

$C_{21}H_{19}N_4I = C_{20}H_{18}N_4.MeI$.

At 25° , $\Lambda(272) = 85$; **314**.

3-Methyl-4-*iso*-nitrosopyrazolone. $C_4H_5O_2N_2$.

$k_A \times 10^6$ at $15^\circ = 0.90$. At $25^\circ = 1.2$ (hydrol. and cond.); m. p. 232° cor. [132° is a typographical error]; **1141**, **1143**; is over 18 (hydrol.) for true acid; $= 2.2$ (cond.); **752**. At $40^\circ = 1.72$ (hydrol. and cond.); **1141**, **1143**.

$k_B \times 10^{14}$ at 25° is less than 1 (hydrol.); **1143**.

At 25° , $\Lambda(194.9) = 5.8$, $(389.8) = 8.0$, $(\infty) = 378$; **1143**.

Na.A at 25° , $\Lambda(32) = 70.7$, $(1024) = 81.1$; **752**. At 15° – 40° ; **1143**.

– Aniline salt; **1141**, **1143**.

Methylnitro-uracil. $C_5H_5O_4N_3$.

$k_A \times 10^7$ at $25^\circ = 4$.

$\mu(512) = 5.2$, $(1024) = 6.5$; **1748**.

Methyl Orange see **Dimethyl-aminoazobenzene sulphonic acid**.

Methyloximino-syn-oxazolone. $C_4H_4O_3N_2$.

$k_A \times 10^5$ at $0^\circ = 0.8$. At $25^\circ = 3.5$. At $35.5^\circ = 5.9$.

Cond. showing decomposition in soln. into *amphi*-Dioximino-butyric acid.

At 25° , $\mu(32) = 11.7$, $(\infty) = 357$; **701**.

Neutral K.A at 0° , $\Lambda(64) = 48.5$; **702**, **701**.

3-Methyl-2-oxy-1,6-dihydro-purine. (Desoxy-3-methylxanthine. 3-Methyl-desoxy-xanthine). $C_8H_8ON_4$.

$k_A \times 10^{13}$ at $25^\circ = 7.9$ (catal.); **1707**.

Methylparabanic acid. $C_4H_4O_3N_2$.

At 25° , $\mu(32) = 2.6$, $(1024) = 6.0$; decomposes in soln.; **1748**.

1-Methylpentamethylene-2-carboxylic acid. (Hexanaphthene-carboxylic acid. 1-Methylcyclopentane-3-carboxylic acid.)

$C_7H_{12}O_2$.

$k_A \times 10^5$ [at 25°] = 1.07.

$\Lambda(53.4) = 8.3$, $(855.0) = 31.7$, $(\infty) = 352$; **2026**.

α -Methyl- $\alpha\beta$ -pentenoic acid. (α -Methyl- β -ethylacrylic acid).

$C_6H_{10}O_2 = Me.CH_2.CH:CHMe.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.0$; diminishes on diln. = 1.12; **1371**; = 0.99; **571**.

$\Lambda(32) = 6.7$, $(1024) = 35.2$, $(\infty) = 378$; **571**.

Na.A at 25° , $\Lambda(1024-32) = 10-11$; **571**.

α -Methyl- $\beta\gamma$ -pentenoic acid. (α -Ethylcrotonic acid).

$C_6H_{10}O_2 = Me.CH:CH.CHMe.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 3.05$; diminishes on diln.; b. p. $198^\circ-199^\circ$.

$\Lambda(32) = 11.6$, $(1024) = 59.2$, $(\infty) = 378$.

Na.A at 25° , $\Lambda(1024-32) = 10-11$; **571**.

α -Methyl- $\gamma\delta$ -pentenoic acid. $C_6H_{10}O_2 = CH_2:CH.CH_2.CHMe.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 2.16$; b. p. $193-194^\circ$.

$\Lambda(32) = 9.8$, $(1024) = 52.1$, $(\infty) = 378$; **571**.

Na.A at 25° , $\Lambda(1024-32) = 10-11$; **571**, **622**.

β -Methyl- $\alpha\beta$ -pentenoic acid. $C_6H_{10}O_2 = MeCH_2.CMe:CH.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 8.1$; diminishes on diln.; m. p. 46° ; **566**, **569**, **642**.

At 25° , $\Lambda(32) = 6.2$, $(1024) = 30$, $(\infty) = 378$; **566**.

β -Methyl- $\beta\gamma$ -pentenoic acid. $C_6H_{10}O_2 = MeCH:CHMe.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 3.1$; diminishes on diln.; b. p. 199° ; **566**, **569**, **642**.

At 25° , $\Lambda(32) = 11.7$, $(1024) = 56.3$, $(\infty) = 378$; **566**.

Na.A at 25° , $\Lambda(32) = 69.1$, $(1024) = 80.6$; **642**.

meso-Methylphenmiazolemonocarboxylic acid see *α*-Methyl-*m*-benzimidazole-carboxylic acid.

Methyl-phenyl-acridinium hydroxide. (Methylphenylacridonium hydroxide. 9-Phenyl-acridine-10-methylum hydroxide).



At 0°, $\mu(256) = 117$; changes in soln. to Methylphenyldihydro-acridol; **763**.

B.Cl (= $\text{C}_{19}\text{H}_{15} \cdot \text{NMeCl}$) at 0°; **763**. At 25°, $\mu(32) = 86.8$, (1024) = 100.6; dec. 225°; **1075**. - B.CN; **763**. - 2B.SO₃; **1075**. - 2B.SO₄; **747**, **1075**.

Methylphenylacridol see **Methyl-phenyldihydro-acridol**.

Methylphenylaticonic acid see **Methylenephenylpyrotartaric acid**.

Methylphenylbenzylaminopyrazole see **Benzyliminopyrine**.

N-Methyl-phenyldihydro-acridol. (Methylphenylacridol. 10-Methyl-9-phenyl-9-hydroxy-9,10-dihydro-acridine). $\text{C}_{20}\text{H}_{17}\text{ON}$.

No cond. in aq.

B.CN = CN.C₁₈H₁₅.NMe (Phenyldihydro-acridine carboxylic acid nitrile). Almost no cond. in aq.; **763**.

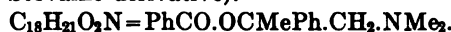
Methylphenyldihydro-resorcylic acid nitrile.



$k_A \times 10^4$ at 25° = 2 aq.

$\Lambda(266.5) = 77.7$, (1066) = 136.9, (∞) = 372; **1588**.

Methylphenyl-dimethylamino-methyl carbinol benzoate. (Phenyl Stovaine derivative).



$k_B \times 10^7$ at 15° is about 1 (hydrol.); **1779**, **1777**.

3-Methyl-1-phenyl-5-ethoxy-pyrazole. $\text{C}_{12}\text{H}_{14}\text{ON}_2$.

No cond. in aq.; m. p. 40°; **977**.

4-Methyl-1-phenyl-3-ethoxy-urazole. $\text{C}_{11}\text{H}_{12}\text{O}_2\text{N}_2$.

Cond. in alc. soln. of HCl; **18**.

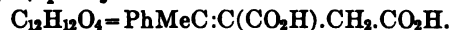
Methylphenylethylenelactic acid see **Methylphenylhydroxy-propionic acid**.

α-Methyl-β-phenyl-β-hydroxy-propionic acid. (Methylphenylethylenelactic acid). $\text{C}_{10}\text{H}_{12}\text{O}_3 = \text{PhCH}(\text{OH}) \cdot \text{CHMe} \cdot \text{CO}_2\text{H}$.

$k_A \times 10^5$ at 25° = 3.47; increases, then diminishes on diln.; m. p. 95°.

$\mu(39.9) = 12.7$, (1277.8) = 64.1, (∞) = 349; **1704**.

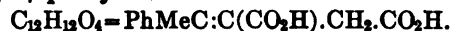
γ-Methyl-γ-phenylitaconic acid.



$k_A \times 10^4$ at 25° = 2.01; diminishes on diln.; m. p. 171° with dec.

$\mu(64) = 37.6$, (1024) = 123.9, (∞) = [350]; **1661**, **817**.

γ-Methyl-γ-phenyl-iso-itaconic acid.



- $k_A \times 10^4$ at $25^\circ = 2.3$ aq.; diminishes on diln.; m. p. 178° – 179° ; **1638**; m. p. 183° – 185° ; **1661**, **817**.
 Second $k_A \times 10^7 = 6.2$ (inversion); **1638**.
 At 25° , $\mu(640) = 110.4$, $(1280) = 143.2$, $(\infty) = [350]$; **1661**.
Methylphenylketone see **Acetophenone**.
Methylphenylketoxime see **Acetophenone oxime**.
3-Methyl-1-phenyl-4-iso-nitroso-5-pyrazolone. $C_{10}H_9O_2N_3$.
 $k_A \times 10^6$ at $25^\circ = 2.4$; of true, salt-forming, acid is over 18 (hydrol.).
 $\mu(256) = 8.5$, $(\infty) = 351$.
 Na.A at 25° , $\Lambda(32) = 61.1$, $(1024) = 71.6$; **752**. In pyridine; **754**.
3-Methyl-1-phenyl-5-pyrazolone. $C_{10}H_{10}ON_2$.
 In molten state, fair cond.
 Cond. in aq. equals that of a 1% NaCl soln.; **977**.
fum.-sym.-Methylphenylsuccinic acid.
 $C_{11}H_{12}O_4 = CO_2H.CHMe.CHPh.CO_2H$.
 $k_A \times 10^4$ at $25^\circ = 3.74$; diminishes on diln.; m. p. 192° – 193° ; **2018**, **2023**.
 $\mu(80.3) = 54.8$, $(1285) = 169.2$, $(\infty) = 345$; **2018**.
mal.-sym.-Methylphenylsuccinic acid. $C_{11}H_{12}O_4$.
 $k_A \times 10^4$ at $25^\circ = 2.33$; diminishes on diln.; m. p. 170° – 171° ; **2018**, **2023**.
 $\mu(78.8) = 43.7$, $(1260) = 139.8$, $(\infty) = 345$; **2018**.
4-Methyl-1-phenyl-3-thio-urazole. $C_9H_9ON_2S$.
 $k_A \times 10^2$ at $25^\circ = 1.8$; diminishes on diln.; m. p. 196° .
 $\Lambda(256) = 299.7$, $(512) = 309.7$, $(\infty) = 355$; **18**.
2-Methyl-1-phenyl-urazole. $C_9H_9O_2N_2$.
 $k_A \times 10^8$ at $25^\circ = 6.7$; m. p. 185° .
 $\Lambda(128) = 1$, $(1024) = 2.5$, $(\infty) = 345$.
 Na.A at 25° , $\Lambda(64) = 59.1$, $(1024) = 66.1$; **18**.
4-Methyl-1-phenyl-urazole. $C_9H_9O_2N_2$.
 $k_A \times 10^5$ at $25^\circ = 1.2$; diminishes on diln.; m. p. 225° .
 $\Lambda(512) = 27$, $(1024) = 37.5$, $(\infty) = 355$.
 Na.A at 25° , $\Lambda(64) = 55.8$, $(1024) = 63.8$; **18**.
O-Methyl-N-phenyl-pseudo-urea. $C_8H_{10}ON_2 = NH:C(NHPh)OMe$.
 $k_B \times 10^7$ at $25^\circ = 2.5$; m. p. 46.5° ; **285**, **286**.
 $\Lambda(32) = 0.6$, $(256) = 2.1$, $(\infty) = 225.5$; **285**.
 B.HCl at 25° , $\Lambda(32) = 90.4$, $(1024) = 102.6$; **286**.
Methyl-m-phthalic acid see **Uvitic acid**.
Methylpicolinium chloride. $C_7H_{10}NCl = C_6H_7N.MeCl$.
 At 25° , $\Lambda(32) = 94.4$, $(1024) = 106.6$; **270**.
 α -Methylpimelic acid. $C_8H_{14}O_4 = CO_2H.(CH_2)_4.CHMe.CO_2H$.
 $k_A \times 10^5$ [at 25°] = 3.15; m. p. 57° – 58° ; **2024**.
Methylpropylcarboxylglutaric acid see **Propyl-iso-butenyltricarboxylic acid**.

***a*-sym.-Methylpropylglutaric acid.**

$k_A \times 10^6$ at $25^\circ = 5.4$; m. p. 51° – 53° . [Given as either Dimethyl-N-propylsuccinic acid or this acid.]

$\mu(64) = 20$, $(512) = 52.2$, $(\infty) = 350$; **201**.

 ***β* -sym.-Methylpropylglutaric acid.** $\text{C}_9\text{H}_{16}\text{O}_4$.

$k_A \times 10^6$ at $25^\circ = 5.9$; m. p. 101° – 102° . [Given as either Dimethyl-H-propylsuccinic acid or this acid.]

$\mu(64) = 20.9$, $(512) = 53.8$, $(\infty) = 350$; **201**.

Methylpropyl ketone. $\text{C}_8\text{H}_{10}\text{O} = \text{Me}.\text{CO}.\text{Pr}.$

$\kappa \times 10^7$ at $25^\circ = 9.5$; **1106**, **1107**.

In HBr and H_2S , fair cond.; **1897**.

As solvent; **474**, **1106**, **1107**.

Methylpropylmaleic acid. $\text{C}_8\text{H}_{12}\text{O}_4 = \text{CO}_2\text{H}.\text{CMe}:\text{CPr}.\text{CO}_2\text{H}.$

$k_A \times 10^6$ at $25^\circ = 7.3$; measured in aq. soln. of the anhydride.

$\mu(64) = 25.2$, $(1024) = 89.5$, $(\infty) = 376$; **1031**.

Methylpropylmaleic acid anhydride. $\text{C}_8\text{H}_{10}\text{O}_3$.

B. p. 241° – 242° cor.; see the acid.

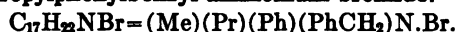
Methyl-*iso*-propylmaleic acid. $\text{C}_8\text{H}_{12}\text{O}_4 = \text{CO}_2\text{H}.\text{CMe}:\text{C}i\text{so-Pr}.\text{CO}_2\text{H}.$

$k_A \times 10^4$ at $25^\circ = 1.5$; diminishes on diln.; measured in aq. soln. of the anhydride.

$\mu(64) = 35$, $(1024) = 84.7$, $(\infty) = 376$; **1031**.

Methyl-*iso*-propylmaleic acid anhydride. $\text{C}_8\text{H}_{10}\text{O}_3$.

B. p. 240° – 242° ; see the acid.

Methylpropylmalonic acid, $\text{C}_8\text{H}_{14}\text{O}_4$, in 1667 is a misprint for Ethyl-propyl- etc.**Methylpropylphenylbenzyl aminonium bromide.**

At 25° , $\Lambda(32) = 86.9$, $(1024) = 91.6$. In Et alc.; **1903a**.

***cis*- $\alpha\alpha_1$ -Methylpropylsuccinic acid.**

$k_A \times 10^4$ at $25^\circ = 2.71$; m. p. 92° – 93° .

$\mu(26.5) = 28.4$, $(212.0) = 74.7$, $(\infty) = [351]$; **236**.

***trans*- $\alpha\alpha_1$ -Methylpropylsuccinic acid.** $\text{C}_8\text{H}_{14}\text{O}_4$.

$k_A \times 10^4$ at $25^\circ = 3.35$; m. p. 158° – 160° .

$\mu(55.0) = 44.4$, $(440.0) = 110.3$, $(\infty) = [351]$; **236**.

***cis*-sym.-Methyl-*iso*-propylsuccinic acid.** $\text{C}_8\text{H}_{14}\text{O}_4$.

$k_A \times 10^4$ at $25^\circ = 6.6$; increases on diln.; m. p. 125° – 126° .

$\mu(90.8) = 75.4$, $(726.4) = 173.8$, $(\infty) = [351]$; **235**.

***trans*-sym.-Methyl-*iso*-propylsuccinic acid.** $\text{C}_8\text{H}_{14}\text{O}_4$.

$k_A \times 10^4$ at $25^\circ = 1.54$; increases on diln.; m. p. 174° – 175° .

$\mu(161.7) = 51.8$, $(1293.6) = 127.1$, $(\infty) = [351]$; **235**.

N-Methyl pyrazole. $\text{C}_4\text{H}_6\text{N}_2$.

$k_B \times 10^{12}$ [at 25°] = 1.1 (catal.); b. p. 127° ; **428**.

3-Methyl pyrazole. $C_4H_6N_2$. $k_B \times 10^{11}$ [at 25°]=3.6 (solub.); b. p. 202° ; **428**.**Methylpyridine** see **Picoline**.**2-Methylpyridine-3,5-dicarboxylic acid.** $C_8H_7O_4N$. $k_A \times 10^3$ at 25° =2. $\mu(128)=138.6$, $(1024)=264.4$, $(\infty)=353$; **1372**.**2-Methylpyridine-3,5,6-tricarboxylic acid.** $C_8H_7O_6N$.At 25° , $\mu(128)=285$, $(1024)=468$; **1372**.Na.A at 25° , $\mu(32)=84.3$, $(1024)=115.1$; **1369**.**4-Methylpyridine-3,5,6-tricarboxylic acid.** (γ -Methyl- etc.). $C_8H_7O_6N$.At 25° , $\mu(128)=343$, $(1024)=538$; **1372**.**Methylpyridinium hydroxide.** $C_6H_9ON=C_6H_5N.MeOH$.At 25° , $\Lambda(32)=217.4$, $(256)=224$; **763**.B.Cl($=C_6H_5N.MeCl$) at 25° , $\Lambda(32)=99.7$, $(1024)=112.2$; **270**.- B.I, in pyridine; **753**. - B.I.Br₂; m. p. 68° - 69° , cond. when molten; **1578**.**N-Methyl-pyrrolidine- $\alpha\alpha'$ -dicarboxylic acid.** $C_7H_{11}O_4N$. $k_A \times 10^2$ at 25° is over 1. $\mu(32)=198.8$, $(1024)=620.1$; m. p. 273° - 274° ; **1979**.**1-Methylpyrrolglyoxylic acid.** $C_7H_7O_3N=Me.C_4H_5N.CO.CO_2H$. $k_A \times 10^2$ at 25° =2.7 aq. $\mu(30)=208$, $(960)=340$, $(\infty)=357$; m. p. 142.5° ; **23**.Cond. not increased by boric acid; **1186**.**2-Methylpyrrolketone-5-carboxylic acid.** (α - or *pseudo*-Acetylcarbo-pyrrolic acid. 2-Acetyl-pyrrole-5-carboxylic acid.) $C_7H_7O_3N=MeCO.C_4H_5N.CO_2H$. $k_A \times 10^4$ at 25° =3 aq.; increases, then diminishes on diln.; m. p. 186° ; **23**, **1186**. $\mu(40)=37.0$, $(1280)=163.7$, $(\infty)=357$; **23**.Cond. with boric acid; **1186**.**2-Methyl quinoline** see **Quinaldine**.**4-Methyl quinoline** see **Lepidine**.**6-Methyl quinoline** see **p-Tolu quinoline**.**Methylquinolinium hydroxide.** $C_{10}H_{11}ON=C_9H_7N.MeOH$.At 0° , $\Lambda(32)=209$; changes in soln. to Methylquinolinium oxide; **763**.B.Cl ($=C_9H_7N.MeCl$) at 25° , $\Lambda(32)=92.0$, $(1024)=104.4$; **270**.- B.I, in propionic aldehyde; **1844**. - B.I.I₂, m. p. 108.6° - 109.6° and B.I.I₄, m. p. 72° - 73° ; cond. when molten; **1578**.**Methyl-iso-quinolinium hydroxide.** $C_{10}H_{11}ON$.At 0° , $\Lambda(32)=206.9$; **763**.B.Cl($=C_9H_7N.MeCl$) at 25° , $\Lambda(32)=92.4$, $(1024)=104.6$; **270**.

Methylquinolinium oxide. $C_{20}H_{30}ON_2 = (C_9H_7NMe)_2O$.

No cond. in aq.; **763**. [In **763** it is claimed that this compound was prepared pure. Decker (Ber. Deutsch. Chem. Ges. 36, 1210) could not make a pure compound of this description.]

Methyl Red see **p-Dimethyl-amino-azobenzene-o-carboxylic acid**.

Methylsalicylic acid see **o-Methoxy-benzoic acid**.

Methylsuccinic acid see **Pyrotartaric acid**.

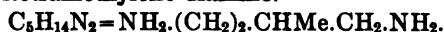
Methyl sulphide see **Dimethyl sulphide**.

Methyl sulphuric acid see **Sulphuric acid mono methyl ester**.

Methyl sulphurous acid see **Sulphurous acid mono methyl ester**.

Methyltartaric acid see **Tartaric acid mono methyl ester**.

β -Methyltetramethylene diamine.



$k_B \times 10^4$ at $25^\circ = 5.6$ aq.; about 16% too high.

$\Delta(64) = 33.8$, $(256) = 60.6$, $(\infty) = 197$; **271**.

$B.2HCl$ at 25° , $\Delta(32) = 104.6$, $(1024) = 125.6$; **270**.

4-Methylthiazole-5-carboxylic acid. $C_5H_5O_2NS$.

$k_A \times 10^4$ at $25^\circ = 3.9$; increases on diln. $\Delta(131.1) = 65.8$, $(1048.4) = 163.8$, $(\infty) = 357$; **175**.

2-Methylthiazole-4,5-dicarboxylic acid. $C_6H_5O_4NS$.

$k_A \times 10^2$ at $25^\circ = 7$; diminishes on diln.

$\mu(98.9) = 317.5$, $(1581.6) = 355$, $(\infty) = 357$; **175**.

meso-Methylthiazolemethylcarboxylic acid see **2,4-Dimethyl-thiazole-5-carboxylic acid**.

Methyl thiocarbimide. (Methyl mustard oil.) $C_2H_5NS = CSN.Me$.

$\alpha \times 10^7$ at $50^\circ = 3.3$; b. p. $117^\circ @ 758$ mm.; **1843**.

As solvent, **1844**.

Methyl thiocyanate see **Thiocyanic acid methyl ester**.

Methylthio-phenyl- see **Phenyl-methylthio-**

Methyl-thio-uracil. $C_5H_5ON_2S$.

$k_A \times 10^8$ at $25^\circ = 5$.

$\mu(512) = 1.7$, $(1024) = 2.4$.

$Na.A$ at 25° , $\mu(32) = 241.0$, $(1024) = 346.3$; **1748**.

6-Methyl-2,3-triazo-4-hydroxy-7,0''-pyridazine.



$k_A \times 10^5$ at $25^\circ = 1.74$; decreases on diln.

$\Delta(256) = 24.3$, $(1024) = 43.8$, $(\infty) = 376$; **305a**.

fum.- α -Methyltricarballic acid. (*trans*- acid).



$k_A \times 10^4$ at $25^\circ = 3.2$; increases on diln. $\mu(32) = 33.4$, $(1024) = 153.3$, $(\infty) = 352$; m. p. 180° ; **1839**; - **237**, **67**.

mal.- α -Methyltricarballic acid. (*cis*- acid). $C_7H_{10}O_6$.

$k_A \times 10^4$ at $25^\circ = 4.8$; increases on diln. $\mu(20.6) = 32.8$, $(165.1) = 90$, $(\infty) = [351]$; m. p. 134° - 135° ; **237**.

mal.- α -Methyltricarballic acid mono methyl ester. $C_8H_{12}O_6$.

$k_A \times 10^5$ at $25^\circ = 8.93; = 8.57$ and 8.88 for other preparations; **237**.

[The methyl group may be in different places in these three.]

Methyltriethyl ammonium chloride. $C_7H_{18}NCl = MeEt_3NCl$.

At 25° , $\Lambda(32) = 90.2$, $(1024) = 102.0$; **270**.

sym.-Methyltrimethenyl-dicarboxylic acid. $C_8H_6O_4 = Me.C_3H(CO_2H)_2$.

$k_A \times 10^4 = 5.9$; increases, then diminishes on diln.; m. p. 200° .

$\mu(64) = 62.8$, $(1024) = 191.9$, $(\infty) = 356$; **559**.

Methyltriphenyl phosphonium chloride. $C_{19}H_{18}ClP = (Me)(Ph)_3PCl$.

At 25° , $\Lambda(32) = 80.2$, $(1024) = 91.3$; **270**.

Methyltriphenyl phosphonium iodide. $C_{19}H_{18}IP = (Me)(Ph)_3PI$.

In SO_2 ; **1855**.

Methyluracil. $C_5H_6O_2N_2$.

$k_A \times 10^{10}$ at $25^\circ = 3.14$ (catal.); **1996**; $= 46$ (cond.); **1748**.

At 25° , $\mu(64) = 0.19$, $(1024) = 0.87$, $(\infty) = [356]$; **1748**.

Methyl urea. $C_2H_6ON_2 = NH_2.CO.NHMe$.

Cond. with HCl ; **781**.

B. Oxalate at 25° , $\mu(32) = 176.1$, $(1024) = 228.1$; **1748**.

O-Methyl-iso-urea. $C_2H_6ON_2 = NH_2.C(OMe):NH$.

$k_B \times 10^5$ at $25^\circ = 6.4$; diminishes on diln.; m. p. $44^\circ - 45^\circ$; **285**, **286**.

$\Lambda(32) = 10.6$, $(512) = 37.4$, $(\infty) = 239.6$.

B. HCl at 25° , $\Lambda(32) = 104.1$, $(512) = 115.7$, $(1024) = 118?$; **286**.

7-Methyl xanthine. (Heteroxanthine. 7-Methyl-2,6-dioxy-purine.)

$C_8H_6O_2N_4$.

$k_A \times 10^{11}$ at $40.1^\circ = 4.02$ (solub.).

$k_B \times 10^{13}$ at $40.1^\circ = 1.18$ (solub.); **1997**.

Milk; see also **Casein**. [The references to this are incomplete.]

Cond.; **263**, **308**, **1072**, **1511a**.

Concentration of H and OH ions; **422**, **587**.

Molybdenum.

Complex salts; **692**, **1162**, **1163**, **1269**, **1495**, **1515**, **1516**, **1572**.

See also the following compounds.

Molybdenum cyanic acid. $C_8H_4N_8Mo = H_4Mo(CN)_8$.

4K.A at 25° , $\Lambda(32) = 119.3$, $(1024) = 166.0$; **376**. $\Lambda(32) = 118.7$, $(1024) = 167.7$; **1517**.

Molybdenum oxalic acid.

Complex salts; **692**, **1495**, **1515**, **1516**.

Molybdenum thiocyanic acid.

Complex salts; **1162**, **1163**.

Morphine. $C_{17}H_{19}O_3N$.

$k_B \times 10^6$ at $18^\circ = 1$; $\mu(2134) = 9.48$, $(\infty) = 195$; **1224**. At 25° ,

$k \times 10^6 = 20$ aq.; $\mu(1708) = 32.6$; **1241**. [It is evident from

the difference in cond. of these two measurements that at least one of them is in error.]

α of satd. soln. at $0^\circ = 1.31 \times 10^{-3}$; **943**. - Also **1224**, **1241**, for cond.

In HCN; **943**.

B.HCl at 18° ; **1224**. At 25° , $\Delta(32) = 78.4$, $(1024) = 90.7$; **270**.

With allyl thiocarbimide, no cond.; **1223**. - B.HNO₃.

- 2B.H₂SO₄; **1611**. - B.MeCl; **270**.

Mucic acid. C₆H₁₀O₈ = (CHOH)₄(CO₂H)₂.

$k_A \times 10^4$ at $25^\circ = 6.3$ aq.; diminishes, then increases on diln.; m. p. 213.5° ; **1186**; (colorim.); **1781**.

At 25° , $\mu(60) = 62.2$, $(960) = 186$, $(\infty) = 352$; **1186**.

In NH₃, qual.; **606**. In Et alc.; **1185**.

Cond. with boric acid; **1185**, **1186**.

Mucous membrane. [The references to this are incomplete.]

E. m. f.; **622a**.

Murexide see **Purpuric acid**; ammonium salt.

Muscle. [The references to this are incomplete.]

Cond.; **251**, **252**, **253**, **622a**, **624**, **1655b**.

Mustard oils see **Thiocarbimides**.

Mustard oil acetic acid see **Diketo-tetrahydro-thiazole**.

N.

Naphthalene. C₁₀H₈.

Resistance when solid, and when molten; **983a**.

In NH₃, qual.; **606**. In acetonitrile, no cond.; **936**. In MeNH₂, no cond.; **637**.

Cond. with AlCl₃ and EtBr; **1893**. With benzene and toluene; **384**. With picric acid in SO₂; **1842**.

Naphthalene Red. (Magdala Red). [The dye is a mixture of aminonaphthyl-naphthazonium compounds.]

Effect of light on cond.; **833**, **1321**.

Naphthalenesulphonecyamic acid see **Naphthalene sulphonic acid cyanoamide**.

Naphthalenesulphonecyanoamide see **Naphthalene sulphonic acid cyanoamide**.

α -Naphthalene sulphonic acid. C₁₀H₇O₃S = C₁₀H₇.SO₃H.

At 25° , $\Delta(32) = 318.9$, $(1024) = 351.7$; **1366**.

Li.A. - K.A; **1366**. - Ag.A; **1111**. - Na.A at 25° , $\Delta(32) = 65.0$, $(1024) = 78.4$; **1366**.

α -Naphthalene sulphonic acid cyanoamide. (α -Naphthalenesulphonecyamic acid. α -Naphthalenesulphonecyanoamide).

C₁₁H₈O₂N₂S = C₁₀H₇SO₂.NH(CN).

$k_A \times 10^5$ at $25^\circ = 1.6$. [Incorrect in the original.]

$\Delta(1950) = 57.7$, $(3900) = 76.4$, $(\infty) = 354$; **70**.

β -Naphthalene sulphonic acid. $C_{10}H_8O_3S = C_{10}H_7.SO_3H$.

$k_A \times 10^3$ at $25^\circ = 2.7$ aq. $\Delta(39.9) = 360.3$, $(1278) = 378.1$, $(\infty) = 378.2$; m. p. $122^\circ - 124^\circ$.

K.A. - Na.A at 25° , $\Delta(256) = 76.7$, $(1024) = 79.6$; **1940**.

β -Naphthalene sulphonic acid cyanoamide. (β -Naphthalenesulphonecyamic acid. β -Naphthalenesulphonecyanoamide).

$C_{11}H_8O_2N_2S = C_{10}H_7SO_2.NH(CN)$.

$k_A \times 10^5$ at $25^\circ = 6.9$.

$\Delta(2368) = 113.2$, $(4736) = 135.1$, $(\infty) = 354$; **70**.

1,4-Naphthalene sulphonic acid azo- β -naphthol. $C_{20}H_{14}O_4N_2S$.

2Na.A (Roccelline) at 18° , $\mu(32) = 102 - 115$. Cond. with H_2SO_4 ; **1796, 1798**.

Naphthalic acid see **Hydroxy-naphthoquinone**.

α -Naphthoic acid. (Naphthalene-1-carboxylic acid). $C_{11}H_8O_2$.

$k_A \times 10^4$ at $25^\circ = 2$; m. p. 160° ; **175, 71**.

$\Delta(2133) = 167$, $(\infty) = 350$; **175**.

Cond. with NaOH; **1017**.

β -Naphthoic acid. (Naphthalene-2-carboxylic acid). $C_{11}H_8O_2$.

$k_A \times 10^5$ at $25^\circ = 7$; m. p. 182° ; **175, 71; -5; 70**.

$\Delta(3124) = 128.3$, $(\infty) = 350$; **175**.

Cond. with NaOH; **1017**.

α -Naphthol. (1-Hydroxy-naphthalene.) $C_{10}H_8O$.

$k_A \times 10^8$ at 25° is about 1. $\Delta(500) = 0.80$, $(1000) = 1.15$; **1823**.

In HBr; **29**. In NH_3 , qual.; **606**. In $MeNH_2$, good cond.; **637**.

β -Naphthol. (2-Hydroxy-naphthalene.) $C_{10}H_8O$.

In HBr; **29**. In NH_3 , qual.; **606**. *In $MeNH_2$, good cond.; **637**.

Cond. with picric acid; **1042, 1842**.

β -Naphthol Violet see **Meldola Blue**.

Naphthol Yellow see **2,4-Dinitro-1-naphthol-7-sulphonic acid**.

α -Naphthonitrile. $C_{11}H_7N = C_{10}H_7.CN$.

In HCN, no cond.; **943**.

β -Naphthonitrile. $C_{11}H_7N$.

In HCN, no cond.; **943**.

α -Naphthyl amine. (1-Amino-naphthalene.) $C_{10}H_9N$.

$k_B \times 10^{10}$ at $15^\circ = 2.8$ (colorim.); **1777**. At $25^\circ = 0.99$ (part.); **548**.

In HBr, HI and H_2S , no cond.; **1897**. In NH_3 , qual.; **606**. In benzene, alone and with picric acid, no cond.; **1802**.

B.HCl at 25° , $\Delta(100) = 112.2$, $(400) = 124.8$; **1864**. Effect of diazotization on cond.; **1601**. - $2B.H_2SO_4$; **1864**.

β -Naphthyl amine. (2-Amino-naphthalene.) $C_{10}H_9N$.

$k_B \times 10^{10}$ at $15^\circ = 3.9$ (colorim.); **1777**. At $25^\circ = 2.0$ (part.); **548**.

In HBr, little cond. In HI, no cond.; 1897. In H₂S, no cond.; 27, 1897. In NH₃, qual.; 606. In benzene, alone and with picric acid, no cond.; 1802.

B.HCl at 25°, $\Lambda(100)=105.6$, (400)=118.5; 1864. Effect of diazotization on cond.; 1601. — 2B.H₂SO₄; 1864.

1-Naphthylamine-2,4-disulphonic acid.

$C_{10}H_9O_6NS_2=NH_2.C_{10}H_6(SO_3H)_2$. [$NH_2=1$; $HSO_3=2,4$.]

(Colorim.) [$k_A \times 10^4$ is about 1.7]; 1773.

1-Naphthylamine-2,5[?]-disulphonic acid.

$C_{10}H_9O_6NS_2$. [$NH_2=1$; $HSO_3=2,5$ [?].]

At 25°, $\mu(64)=317.2$, (1024)=377.4; 492.

1-Naphthylamine-4,6-disulphonic acid.

$C_{10}H_9O_6NS_2$. [$NH_2=1$; $HSO_3=4,6$.]

At 25°, $\mu(64)=197.6$, (1024)=313.8, (∞)=[350]; 492; (colorim.) 1773.

1-Naphthylamine-4,7-disulphonic acid.

$C_{10}H_9O_6NS_2$. [$NH_2=1$; $HSO_3=4,7$.]

At 25°, $\mu(32)=174.0$, (1024)=335.6, (∞)=[350]; 492; (colorim.); 1773.

Na.A (Dahl's salt); catal. shows that one sulphonic acid group is much dissociated, the other is little dissociated; 957.

1-Naphthylamine-4,8-disulphonic acid.

$C_{10}H_9O_6NS_2$. [$NH_2=1$; $HSO_3=4,8$.]

Almost no acid reaction; (colorim.); 1773.

1-Naphthylamine-5,7?-disulphonic acid.

$C_{10}H_9O_6NS_2$. [$NH_2=1$; $HSO_3=5,7?$.]

No acid reaction; (colorim.); 1773.

2-Naphthylamine-3,6-disulphonic acid.

$C_{10}H_9O_6NS_2$. [$NH_2=2$; $HSO_3=3,6$.]

About as strong as the 1-Naphthylamine-4,7-disulphonic acid (colorim.); 1773.

2-Naphthylamine-4,8-disulphonic acid.

$C_{10}H_9O_6NS_2$. [$NH_2=2$; $HSO_3=4,8$.]

At 25°, $\mu(64)=112.8$, (1024)=226.4, (∞)=[350]; 492. [From this measurement $k_A \times 10^3$ is about 2.]

2-Naphthylamine-6,8-disulphonic acid.

$C_{10}H_9O_6NS_2$. [$NH_2=2$; $HSO_3=6,8$.]

No acid reaction (colorim.); 1773.

1-Naphthylamine-2-sulphonic acid.

$C_{10}H_9O_3NS=NH_2.C_{10}H_6.SO_3H$. [$NH_2=1$; $HSO_3=2$.]

$k_A \times 10^3$ at 25°=2.2; diminishes on diln.; 492, 504; (colorim.); 1773.

At 25°, $\mu(64)=238.0$, (1024)=327.6, (∞)=351; 492.

1-Naphthylamine-4-sulphonic acid. $C_{10}H_9O_3NS$. $[NH_2=1; HSO_3=4.]$ $k_A \times 10^3$ at $25^\circ=2$; diminishes on diln.; **492, 504.**At 25° , $\mu(1024)=258.7$, $(2048)=282.8$, $(\infty)=351$; **492.****1-Naphthylamine-5-sulphonic acid.** $C_{10}H_9O_3NS$. $[NH_2=1; HSO_3=5.]$ $k_A \times 10^4$ at $25^\circ=2.4$; diminishes on diln.; **492, 504**; (colorim.); **1773.**At 25° , $\mu(256)=77$, $(1024)=130.5$, $(\infty)=351$; **492.****1-Naphthylamine-6-sulphonic acid.** $C_{10}H_9O_3NS$. $[NH_2=1; HSO_3=6.]$ $k_A \times 10^4$ at $25^\circ=1.96$; **492, 504**; (colorim.); **1773.**At 25° , $\mu(256)=70.3$, $(1024)=126.0$, $(\infty)=351$; **492.****1-Naphthylamine-7-sulphonic acid.** $C_{10}H_9O_3NS$. $[NH_2=1; HSO_3=7.]$ $k_A \times 10^4$ at $25^\circ=2.3$; diminishes on diln.; **492, 504**; (colorim.); **1773.**At 25° , $\mu(128)=55$, $(1024)=132$, $(\infty)=351$; **492.****1-Naphthylamine-8-sulphonic acid.** $C_{10}H_9O_3NS$. $[NH_2=1; HSO_3=8.]$ $k_A \times 10^5$ at $25^\circ=1.02$; **492, 504.** No acid reaction, (colorim.); **1773.**At 25° , $\mu(1024)=34.1$, $(2048)=47.4$, $(\infty)=351$; **492.****2-Naphthylamine-1-sulphonic acid.** $C_{10}H_9O_3NS$. $[NH_2=2; HSO_3=1.]$ About the same strength as the 1-Naphthylamine-2-sulphonic acid, $k_A \times 10^2=2.2$ (colorim.); **1773.****2-Naphthylamine-5-sulphonic acid.** $C_{10}H_9O_3NS$. $[NH_2=2; HSO_3=5.]$ $k_A \times 10^5$ at $25^\circ=9.4$; **492**; (colorim.); **1773.**At 25° , $\mu(256)=50.3$, $(1024)=93.2$, $(\infty)=351$; **492.****2-Naphthylamine-6?-sulphonic acid.** $C_{10}H_9O_3NS$. $[NH_2=2; HSO_3=6?.]$ $k_A \times 10^4$ at $25^\circ=1.7$; **492**; (colorim.); **1773.**At 25° , $\mu(1024)=118.1$, $(\infty)=351$; **492.****2-Naphthylamine-7-sulphonic acid.** $C_{10}H_9O_3NS$. $[NH_2=2; HSO_3=7.]$ $k_A \times 10^4$ at $25^\circ=1.0$; **492**; (colorim.); **1773.**At 25° , $\mu(512)=71.6$, $(1024)=96.6$, $(\infty)=351$; **492.****2-Naphthylamine-8-sulphonic acid.** $C_{10}H_9O_3NS$. $[NH_2=2; HSO_3=8.]$ $k_A \times 10^4$ at $25^\circ=1.2$; **492.** No acid reaction, (colorim.); **1773.**At 25° , $\mu(512)=77.6$, $(1024)=104.3$, $(\infty)=351$; **492.****1-Naphthylamine-2,4,7-trisulphonic acid.** $C_{10}H_6O_9NS_3=NH_2.C_{10}H_4(SO_3H)_3$. $[NH_2=1; HSO_3=2,4,7.]$ At 25° , $\mu(96)=180.6$, $(1536)=233.1$; **492.** [k_A is of the order of 10^{-3} .]**1-Naphthylamine-3,6,8-trisulphonic acid.** $C_{10}H_6O_9NS_3$. $[NH_2=1; HSO_3=3,6,8.]$

At 25°, $\mu(96)=185.4$, $(1536)=270.3$; **492**. [k_A is of the order of 10^{-3} .]

α -Naphthylamino-acetic acid. (α -Naphthyl glycine).



$k_A \times 10^5$ at 25°=3.3; diminishes on diln.; m. p. 199°; **195**, **1840**.

[$k=4$ is an extrapolated value.]

$\Lambda(1040)=58.9$, $(2080)=78.1$, $(\infty)=350$; **1840**.

β -Naphthylamino-acetic acid. (β -Naphthyl glycine). $C_{12}H_{11}O_2N$.

$k_A \times 10^5$ at 25°=5.9; m. p. 133°–136°; **195**, **1840**.

$\Lambda(560)=58.1$, $(1120)=74.2$, $(\infty)=350$; **1840**.

Naphthylamino-iso-butyric acid acetyl derivative see **Acetyl- β -naphthyl-amino-iso-butyric acid**.

Naphthyl glycine see **Naphthylamino-acetic acid**.

α -Naphthylimino-diacetic acid. $C_{14}H_{13}O_4N=C_{10}H_7.N(CH_2CO_2H)_2$.

$k_A \times 10^4$ at 25°=5.1; m. p. 133°–134°.

$\mu(212)=96$, $(848)=166$, $(\infty)=348$; **1840**.

β -Naphthylimino-diacetic acid. $C_{14}H_{13}O_4N$.

$k_A \times 10^3$ at 25°=2.5; diminishes on diln.; m. p. 182°–183°.

$\mu(200)=173$, $(800)=248$, $(\infty)=348$; **1840**.

β -Naphthylnitroso amine. $C_{10}H_8ON_2=C_{10}H_7.NH(NO)$.

No cond. in aq., when pure; **500**.

Naphthylphenyl- see **Phenyl-naphthyl-**

Narcotine. $C_{22}H_{28}O_7N$.

$k_B \times 10^8$ at 17°=7.9 (colorim.); **1779**. At 18°=8; **1224**.

At 18°, $\mu(23837)=8.3$, $(\infty)=196$; **1224**.

In HCN, no cond.; **943**.

B.HCl at 18°, $\mu(251.3)=89.8$, $(1005.2)=101.9$; **1224**.

Nerium oleander. (Oleander). [The references to this are incomplete.]

Cond. of sap; **253**.

Neurine see **Vinyltrimethyl ammonium hydroxide**.

New Blue R see **Meldola Blue**.

Nickel.

Complex and "double" salts; **427**, **971**, **1384**, **1481**, **1482**, **1734**, **1752**, **1755**, **1832**, **1946**. See also the following compounds.

Nickel carbonyl. $C_4O_4Ni=Ni(CO)_4$.

$\alpha \times 10^9$ at 0°=1; **1272**;=20; **28**. At 20° and at -20°; **1272**.

Nickel cyanic acid. $C_4H_2N_4Ni=H_2Ni(CN)_4$.

2K.A at 25°, $\Lambda(32)=126.2$, $(1024)=146.6$; **1832**; **971**.

Nicotine. $C_{10}H_{14}N_2$.

At 25°, $\mu(32)=1.87$, $(1024)=32.0$; **1306**. [This gives a value of $k_B \times 10^5$, increasing from 0.3 to 3.]

In HBr, fair cond. In HI and H₂S, good cond.; **1897**. In HCN, no cond.; **943**. In H₂S; **1646**. In NH₃, qual.; **606**.

Nicotinic acid see **Pyridine-3-carboxylic acid**.

iso-Nicotinic acid see Pyridine-4-carboxylic acid.

Night Blue. $C_{28}H_{41}N_3 \cdot HCl$.

The dye is the chloride of *p*-Tolyl-tetraethyl-triamino-diphenyl- α -naphthyl carbinol, with the formula given above.

Cond. of soln. at 25°, showing the effect of dialysis; 186, 186a.

Niobium see Columbium.

Nitr- see Nitro-

Nitric acid. HNO_3 . [The references to this are incomplete.]

At 25°.

ν (16) (32) (128) (512) (1024) Unit=reciprocal ohm.

Δ 383.8 389.1 389.5 390.5 392.3. (Tower, Conductivity of Liquids).

Nitric acid amyl ester. (Amyl nitrate). $C_5H_{11}O_2N = NO_2 \cdot OC_5H_{11}$.

$\kappa \times 10^7$ at 25°=2.6.

Cond. with Cu oleate; and as solvent; 1569. Effect of temperature on cond.; 106.

Nitric acid *iso*-butyl ester. (*iso*-Butyl nitrate).

$C_4H_9O_2N = NO_2 \cdot OC_4H_9$.

$\kappa \times 10^8$ at 25° is less than 2; b. p. 120°-124° @ 728 mm.

Cond. with $AgNO_3$ and organic compounds; 1388. Effect of temperature on cond.; 106.

Nitric acid ethyl ester. (Ethyl nitrate). $C_2H_5O_2N = NO_2 \cdot OEt$.

$\kappa \times 10^7$ at 0°=2.26; b. p. 87.2° @ 767 mm.; 1844; 1843. At 25°=1.0; 1847; 1844, 1569.

Cond. with organic salts; 1569, 1844, 1847. Effect of temperature on cond.; 106. As solvent; 1569, 1844, 1847.

Nitric acid methyl ester. (Methyl nitrate). $CH_3O_2N = NO_2 \cdot OMe$.

$\kappa \times 10^6$ at 25°=4.52; b. p. 64.4° @ 730 mm.

Cond. with $AgNO_3$ and organic compounds; and as solvent; 1388.

Nitric acid propyl ester. (Propyl nitrate). $C_3H_7O_2N = NO_2 \cdot OPr$.

In HCN, no cond.; 943.

Nitroacetaldehyde oxime see Ethylnitrolic acid.

Nitro-acetaldehyde phenylhydrazone.

$C_8H_9O_2N_3 = Me.C(NO_2):N.NH.Ph$.

No cond. in aq. soln.; m. p. 141°-142°; 78.

Nitroacetic acid ethyl ester. $C_4H_7O_4N = NO_2 \cdot CH_2 \cdot CO_2Et$.

$k_A \times 10^6$ at 25°=1.4; diminishes on diln.

$\Delta(29.1)=2.5$, (465.8)=9, (∞)=[380]; 1092, 1567.

Nitroacetone. $C_3H_5O_2N = Me.CO.CH:NO.OH$.

$k_A \times 10^6$ at 25°=1.0; m. p. 49°.

$\mu(32)=6.4$, (256)=18.0, (∞)=358; 1137. - 782. Qual.; 780.

In Et alc.; 782.

1²-Nitroacetophenone. (*iso*-Nitro- etc.).

$C_8H_7O_2N = Ph.CO.CH:NO.OH$.

$k_A \times 10^5$ at $25^\circ = 6.3$; increases on diln.; m. p. 108° .

$\mu(256) = 41.1$, $(1024) = 79.2$, $(\infty) = 350$; **780. - 782.**

In Et alc.; **782.**

Na.A at 25° , $\mu(128) = 65.0$, $(512) = 70.0$; **780.**

Nitro-aldehyde- see **Aldehyde-nitro-**

Nitroamide. $\text{H}_2\text{O}_2\text{N}_2 = \text{NO}_2.\text{NH}_2$. [The references to this are incomplete.]

$k_A \times 10^7$ at 0° is about 3. $\mu(26.8) = 0.85$, $(63.1) = 1.13$; **141, 145, 765.**

In NH_3 ; **610.**

Nitroamino- see **Aminonitro-**

Nitroanilic acid. (3,6-Dinitro-2,5-dihydroxy-p-benzoquinone).

$\text{C}_6\text{H}_2\text{O}_6\text{N}_2$.

$\mu(31.6) = 634.1$; decomposes in soln.; **729.**

o-Nitroaniline. $\text{C}_6\text{H}_5\text{O}_2\text{N}_2 = \text{NO}_2.\text{C}_6\text{H}_4.\text{NH}_2$.

No acid properties (part.); **548.**

$k_B \times 10^{14}$ at $25^\circ = 1.5$ (solub.); **659, 1116; = 0.56** (part.); **548.**

In benzene, alone and with picric acid, no cond.; **1802.**

B.HCl at 25° , $\Lambda(100) = 378.3$. - B. H_2SO_4 ; **1864.**

m-Nitroaniline. $\text{C}_6\text{H}_5\text{O}_2\text{N}_2$.

$k_B \times 10^{12}$ at $17^\circ = 3.2$ (part.); **583.** At $25^\circ = 4$ (solub.); **1116; (part.); 548.**

In HBr, HCl and H_2S , no cond.; **1897.** In NH_3 , little or no cond.; **606, 610.** In benzene, alone and with picric acid, no cond.; **1802.**

B.HCl at 25° , $\Lambda(50) = 182.1$. - B. H_2SO_4 ; **1864.**

p-Nitroaniline. $\text{C}_6\text{H}_5\text{O}_2\text{N}_2$.

$k_B \times 10^{12}$ at $25^\circ = 1.1$ (solub.); **1116; = 0.12** (part.); **548.**

In HBr and H_2S , no cond.; **1897.** In NH_3 , little or no cond.; **606, 610.**

3-Nitroaniline-6-sulphonic acid.

$\text{C}_6\text{H}_4\text{O}_5\text{N}_2\text{S} = \text{NH}_2.\text{C}_6\text{H}_3(\text{NO}_2).\text{SO}_3\text{H}$. [$\text{NH}_2 = 1$; $\text{NO}_2 = 3$; $\text{HSO}_3 = 6$.]

$k_A \times 10^8$ at $25^\circ = 8.5$; increases on diln.

$\Lambda(64) = 180$, $(512) = 324.1$, $(\infty) = 355$; **492.**

p-Nitroanisole. (1-Methoxy-4-Nitrobenzene, p-Nitrophenol methyl ether). $\text{C}_7\text{H}_7\text{O}_3\text{N} = \text{NO}_2.\text{C}_6\text{H}_4.\text{OMe}$.

In aq. and in Me alc., very small cond. In HCO_2H , no cond.; **746.** In NH_3 , qual.; **606.**

Nitrobarbituric acid. $\text{C}_4\text{H}_3\text{O}_5\text{N}_3$.

At 25° , $\mu(32) = 323.4$, $(512) = 341.4$, $(\infty) = 356$; **845. 1748.**

Cond. with NaOH; **845.**

Na.A at 25° , $\mu(32) = 67.0$, $(1024) = 77.1$; **1748.**

m-Nitrobenzaldehyde. $C_7H_5O_2N=NO_2.C_6H_4.CHO$.

In NH_3 , qual.; 606. In $MeNH_2$, little cond.; 637.

p-Nitrobenzaldehyde. $C_7H_5O_2N$.

$k_A \times 10^{16}$ at 18° is about 3 (hydrol.).

Cond. with $NaOH$; 532.

Nitrobenzamide see **Nitrobenzoic acid amide**.

Nitrobenzene. $C_6H_5O_2N=Ph.NO_2$.

κ at 0° is extremely small; 923. At 20° , $\kappa \times 10^7 = 1.8$; 1590a. At 25° , $\kappa \times 10^7$ is less than 0.2; 517, 923, 1388; $= 1.13$; 1844; - 941, 1106, 1107, 1569.

In HBr and HI , good cond. In H_2S , no cond.; 1897. In NH_3 , qual.; 606. In $MeNH_2$, little cond.; 637.

Cond. with HCl ; 1553. With inorg. and organic compounds; 923, 941, 1106, 1107, 1223, 1388, 1569, 1844. Dielectric constant; 582. As solvent, under pressure; 1590a. As solvent; (147), (291a), (293), 923, (941), (1444a), 1569, 1590a, (1818), 1844.

p-Nitrobenzene-azo- α -naphthol sulphonic acid.

$C_{16}H_{11}O_6N_2S=OH.C_{10}H_7.N_2.C_6H_3(NO_2).SO_3H$.

k_A is about the same as that of phenolphthalein (colorim.); 818.

p-Nitrobenzene diazonium hydroxide. (p-Nitro diazo benzene).

$C_6H_5O_2N_2=NO_2.C_6H_4.N_2.OH$.

$k_A \times 10^6$ at 0° decreases, from 8.8 to 4.0, on account of decomposition. $\Lambda(128)=12.9$; 501.

$Na.A$ at 0° , $\Lambda(1024-32)=4.8$. At 25° , $\Lambda(32)=66.2$, $(1024)=77.1$; 774.

iso-p-Nitrobenzene diazonium hydroxide. (p-Nitrophenylnitrosoamine). $C_6H_5O_2N_2$.

$B.Cl(=NO_2.C_6H_4.N_2.Cl)$ at 0° , $\Lambda(512)=75.5$; 501.

m-Nitrobenzene sulphimide.

In $MeNH_2$, good cond.; 637.

o-Nitrobenzene sulphonic acid amide.

$C_6H_5O_4N_2S=NO_2.C_6H_4.SO_2NH_2$.

Cond. with $NaOH$; 781.

m-Nitrobenzene sulphonic acid. $C_6H_5O_5NS=NO_2.C_6H_4.SO_3H$.

At 25° , $\Lambda(32)=326.0$, $(1024)=355.6$; 1366.

$Li.A$. - $K.A$; 1366. In NH_3 ; 607. - $Na.A$ at 25° , $\Lambda(32)=68.0$, $(1024)=78.8$; 1366. Alone and with Na_2S ; 660a.

m-Nitrobenzene sulphonic acid amide.

$C_6H_5O_4N_2S=NO_2.C_6H_4.SO_2NH_2$.

In NH_3 ; 607, 610. In $MeNH_2$; 606.

Cond. with $NaOH$; 781.

p-Nitrobenzene sulphonic acid amide. $C_6H_5O_4N_2S$.

Cond. with $NaOH$; 781.

o-Nitrobenzoic acid. $C_7H_5O_4N=NO_2.C_6H_4.CO_2H$.

k diminishes on diln. in almost all these measurements. See 1342 for explanation that this is not due to impurity.

$k_A \times 10^3$ at $0^\circ=10$ aq.; 515. At $10^\circ=7.6$. At $15^\circ=7.07$; 1342. At $18^\circ=7$ (colorim.) 1563. At $20^\circ=6.56$; 1342; $=6.96$ aq.; 515. At $25^\circ=6.15$; 515, 656, 1371, 1581; (hydrol.); 1972, 1973; $=6.02$; m. p. 146.33° cor. and 146.27° cor.; 1342. At $30^\circ=5.86$ aq.; 515; $=5.48$; 1342. At $35^\circ=5.39$ aq.; 515. At $40^\circ=4.94$ aq.; 515, 1581. At $45^\circ=4.53$ aq.; 515. At $50^\circ=4.14$ aq.; 515, 1581. At $60^\circ=3.4$ aq. At $70^\circ=2.8$ aq. At $80^\circ=2.4$ aq. At $90^\circ=1.9$ aq. At $99^\circ=1.6$ aq.; 1581.

[Values in 1581 are approximate.]

Of satd. or nearly satd. soln., at $25^\circ=6.03$; 1342.

Cond. at $0^\circ-35^\circ$; 515, 911, 1342. At $25^\circ-99^\circ$; 1581, 515. At 25° , $\Lambda(32)=140.2$, $(128.2)=223.8$, $(\infty)=396.9$; 1342. $\Lambda(128)=205.3$, $(1024)=312.3$, $(\infty)=355$; 1371.

In HBr, no cond.; 30. In HCN, small cond.; 943. In NH_3 , qual.; 606. In Et alc.; 647 and 144, 1820. In $MeNH_2$, good cond.; 637. In pyridine; 754.

Na.A at 25° , $\Lambda(32)=66.7$, $(1024)=76.4$; 1368a. At $25^\circ-99^\circ$; 1581.

m-Nitrobenzoic acid. $C_7H_5O_4N$.

$k_A \times 10^4$ at $0^\circ=2.98$ aq.; 515. At $18^\circ=3.5$ (colorim.); 1563. At $20^\circ=3.35$ aq.; 515. At $25^\circ=3.45$; 1371, 515, 1581. At $30^\circ=3.43$ aq.; 515. At $35^\circ=3.45$ aq.; 515. At $40^\circ=3.47$ aq.; 515, 1581. At $45^\circ=3.47$ aq.; 515. At $50^\circ=3.48$ aq.; 515, 1581. At $60^\circ=3.5$ aq. At $70^\circ=3.3$ aq. At $80^\circ=3.1$ aq. At $90^\circ=2.9$ aq. At $99^\circ=2.6$ aq.; 1581. [Values in 1581 are approximate.]

Cond. at $0^\circ-35^\circ$; 515, 911. At $25^\circ-99^\circ$; 1581, 515. At 25° , $\Lambda(64)=48.7$, $(1024)=157.6$, $(\infty)=355$; 1371.

In HBr and HCl, small cond.; 30. In NH_3 , qual.; 606. In N_2O_4 , no cond.; 602.

Na.A at 25° , $\Lambda(1000)=78.3$; also at $0^\circ-50^\circ$; 515. At $25^\circ-99^\circ$; 1581.

m-Nitrobenzoic acid amide. $C_7H_5O_3N_2=NO_2.C_6H_4.CONH_2$.

Cond.; 1479.

p-Nitrobenzoic acid. $C_7H_5O_4N$.

$k_A \times 10^4$ at $18^\circ=4$ (colorim.); 1563, 1781. At $25^\circ=4.01$; diminishes on diln.; 1371.

At 25° , $\Lambda(256)=97$, $(1024)=164.7$, $(\infty)=355$; 1371.

In HBr, no cond.; 30. In NH_3 , qual.; 606.

Na.A at 25° , $\Lambda(32)=67.4$, $(1024)=76.4$; 1368a. At $25^\circ-99^\circ$; 1581.

p-Nitrobenzoic acid amide. $C_7H_5O_2N_2$.

Cond.; 1479.

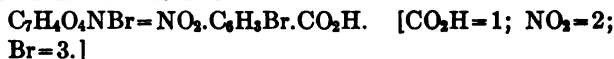
o-Nitrobenzoyl-malonic acid diethyl ester.



$k_A \times 10^4$ at $25^\circ = 2.08$. $\mu(1200) = 136$, $(2400) = 174$, $(\infty) = 349$.

K.A. - Na.A at 25° , $\mu(32) = 61.1$, $(1024) = 70.2$; 1823, 1831.

2-Nitro-3-bromobenzoic acid.



$k_A \times 10^3$ [at 25°] = 3.4.

$\Delta(1024) = 287$, $(\infty) = 353$; 849.

3-Nitro-2-bromobenzoic acid. $C_7H_4O_4NBr$.

$k_A \times 10^3$ [at 25°] = 1.16.

$\Delta(256) = 278$, $(1024) = 328$, $(\infty) = 353$; 849.

5-Nitro-2-bromobenzoic acid. $C_7H_4O_4NBr$.

$k_A \times 10^3$ [at 25°] = 9.1; increases on diln.

$\Delta(256) = 266$, $(1024) = 324$, $(\infty) = 353$; 849.

6-Nitro-3-bromobenzoic acid. $C_7H_4O_4NBr$.

$k_A \times 10^2$ at $25^\circ = 1.5$; increases on diln.; 849; = 1.4; diminishes on diln.; 1371.

$\Delta(256) = 290$, $(512) = 318$, $(\infty) = 355$; 849.

Nitrobromomethane. $CH_2O_2NBr = CH_2(NO_2)(Br)$.

$\Delta(32) = 0.1$; b. p. $145^\circ - 146^\circ$; 780.

Nitrocaproic acid. $C_8H_{11}O_4N = C_6H_{10}(NO_2).CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.23$; diminishes on diln.

$\Delta(64) = 29.9$, $(1024) = 102.5$, $(\infty) = 352$; 1370.

Nitrocarbamic acid ethyl ester. (Nitro-urethane).



$k_A \times 10^4$ at $0^\circ = 3.03$. At $10^\circ = 3.85$; 143. At $20^\circ = 4.83$; 143; = 3.9; 757. At $30^\circ = 5.71$. At $40^\circ = 6.44$; 143.

Cond.; 141, 143, 782. At 20° , $\Delta(32) = 40.9$, $(256) = 104.4$, $(\infty) = 351.9$; 143.

In Et alc.; 754, 782. In piperidine and in pyridine; 754.

$NH_4.A$ in NH_3 ; 610. - Na.A at $0^\circ - 40^\circ$; at 20° , $\Delta(1000) = 100.5$; 143.

m-Nitrochlorobenzene. $C_6H_4O_2NCl$.

In NH_3 , qual.; 606.

p-Nitrochlorobenzene. $C_6H_4O_2NCl$.

In NH_3 , qual.; 606.

2-Nitro-3-chlorobenzoic acid.



$k_A \times 10^3$ [at 25°] = 4.5; diminishes on diln.

$\Delta(512) = 268$, $(1024) = 298$, $(\infty) = 356$; 849.

- 2-Nitro-4-chlorobenzoic acid.** $C_7H_4O_4NCl$.
 $k_A \times 10^2$ at $25^\circ = 1.0$; diminishes on diln.
 $\Delta(245.7) = 271.4$, $(982.8) = 317.7$, $(\infty) = 356$; **175**.
- 3-Nitro-2-chlorobenzoic acid.** $C_7H_4O_4NCl$.
 $k_A \times 10^3$ [at 25°] = 8.7; m. p. 185° .
 $\Delta(256) = 267$, $(1024) = 323$, $(\infty) = 356$; **849**.
- 3-Nitro-4-chlorobenzoic acid.** $C_7H_4O_4NCl$.
 $k_A \times 10^4$ at $25^\circ = 4.6$; diminishes on diln.
 $\Delta(390.5) = 122.8$, $(1562) = 196.9$, $(\infty) = 356$; **175**.
- 4-Nitro-2-chlorobenzoic acid.** $C_7H_4O_4NCl$.
 $k_A \times 10^2$ at $25^\circ = 1.03$; diminishes on diln.
 $\Delta(32.1) = 153.8$, $(514.1) = 302.2$, $(\infty) = 356$; **175**.
- 5-Nitro-2-chlorobenzoic acid.** $C_7H_4O_4NCl$.
 $k_A \times 10^3$ at $25^\circ = 6.5$; diminishes on diln.; **175**, **849**.
 $\Delta(256) = 252$, $(1024) = 309$, $(\infty) = 356$; **849**.
- 6-Nitro-3-chlorobenzoic acid.** $C_7H_4O_4NCl$.
 $k_A \times 10^2$ at $25^\circ = 1.44$; diminishes on diln.; **849**; = 1.52; diminishes on diln.; **175**.
 $\Delta(256) = 291$, $(1024) = 333$, $(\infty) = 356$; **849**.
- 4-Nitro-2-chlorophenol.** $C_6H_4O_3NCl = NO_2.C_6H_3Cl.OH$. [OH = 1.]
 $k_A \times 10^4$ at $25^\circ = 1.8$.
 $\Delta(345.2) = 78.6$, $(1380.8) = 137.1$, $(\infty) = 354$; **70**.
- 3-Nitro-4-chlorotoluene.** $C_7H_6O_2NCl$.
In NH_3 , qual.; **606**.
- o-Nitrocinnamic acid.** $C_9H_7O_4N$.
In NH_3 , qual.; **606**.
- m-Nitrocinnamic acid.** $C_9H_7O_4N = NO_2.C_6H_4.CH:CH.CO_2H$.
Na.A at 25° , $\Delta(32) = 64.1$, $(1024) = 76.5$; **1367**.
- p-Nitrocinnamic acid.** $C_9H_7O_4N$.
Na.A at 25° , $\Delta(32) = 64.8$, $(1024) = 77.0$; **1367**.
- 3-Nitrocuminic acid.** $C_{10}H_{11}O_4N = C_3H_7.C_6H_3(NO_2).CO_2H$.
 $k_A \times 10^4$ at $25^\circ = 2.15$.
 $\Delta(2008) = 167.8$, $(4016) = 207.3$, $(\infty) = 350$; **175**.
- p-Nitro diazo benzene** see **p-Nitrobenzene diazonium hydroxide**.
- 4-Nitro-2,6-dichloro-phenol.**
 $C_6H_3O_3NCl_2 = NO_2.C_6H_2Cl_2.OH$. [OH = 1.]
 $k_A \times 10^4$ at $25^\circ = 2.1$.
 $\Delta(374) = 84.1$, $(1496) = 151.2$, $(\infty) = 353$; **70**.
- Nitro-1,4-dimethoxy-benzene** see **Nitro-hydroquinone dimethyl ether**.
- Nitro-dimethyl-aniline sulphonic acid.**
 $C_8H_{10}O_5N_2S = NMe_2.C_6H_3(NO_2).SO_3H$.
At 25° , $\Delta(32) = 82.9$, $(1024) = 90.6$, $(\infty) = 353$; [this gives a value of k_A diminishing from 2×10^{-3} to 8×10^{-5}]; **492**.

Nitroethane. $C_2H_5O_2N = C_2H_5.NO_2$.

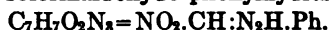
No cond. in aq. soln. The salts are really the salts of *iso*-nitroethane. Cond. with NaOH and $Ba(OH)_2$ showing change to isomer; **780**. [The salts are described here, on account of their mode of preparation and the doubt as to the structure of the isomer.]

K.A, cond. with $HgNO_2$; **149**. - Na.A at 25° , $\Lambda(32) = 69.0$, (1024) = 81.9; **1686**.

***iso*-Nitroethane.** $C_2H_5O_2N$.

The pure compound would be as strong as acetic acid, as shown by cond. of salts. At 0° , $\Lambda(48) = 9.4$; **780**.

Salts; see under Nitroethane.

Nitroform see **Trinitro-methane**. **α -Nitroformaldehyde phenylhydrazone**, m. p. 74.5° – 75.5° and **β -Nitroformaldehyde phenylhydrazone**, m. p. 84.5° – 85.5° .

[The references are to both compounds.]

In aq. soln., almost no cond.; **82**; - **78**, **1593**.

Cond. in Me and Et alc.; **1593**.

Cond. with NaOH and HCl; **82**, **1593**.

Na.A; **82**, **1593**.

Nitroguanidine. $CH_4O_2N_4 = NO_2.N:C(NH_2)_2$.

$k_B \times 10^{14}$ at $40.2^\circ = 2.1$ (catal.); **1995** and **1150**.

In NH_3 ; **610**.

Nitrohemipinic acid. $C_{10}H_9O_8N = (MeO)_2C_6H(NO_2)(CO_2H)_2$.

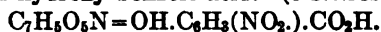
[$CO_2H = 1, 2$; $OMe = 3, 4$; $NO_2 = 6$.]

$k_A \times 10^2$ [at 25°] = 2.1; increases on diln.

$\mu(32) = 205.4$, (256) = 335.7, (∞) = 374; **1684**.

Nitro-hydroquinone dimethyl ether. (Nitro-1,4-dimethoxy-benzene).

Cond. in aq. and in Me alc., very small; in HCO_2H , no cond.; **746**.

3-Nitro-2-hydroxy-benzoic acid. (*o*-Nitrosalicylic acid).

$k_A \times 10^2$ at $25^\circ = 1.57$; diminishes on diln.; m. p. 146° ; **1186**, **1371**, **1365**.

$\Lambda(128) = 260$, (1024) = 335, (∞) = 355; **1371**.

In Et alc.; **1185**, **1508**, **1718**.

Cond. with boric acid; **1185**, **1186**. With NaOH; **1508**, **1718**.

5-Nitro-2-hydroxy-benzoic acid. (*p*-Nitrosalicylic acid). $C_7H_5O_6N$.

$k_A \times 10^2$ at $25^\circ = 8.9$; **1371**; = 8.0 aq.; m. p. 228° – 228.5° ; **1186**, **1365**.

$\Lambda(256) = 267$, (1024) = 322, (∞) = 355; **1371**.

In Et alc.; **1185**, **1508**, **1718**.

Cond. with boric acid; **1185**, **1186**. With NaOH; **1508**, **1718**.

Nitro-4-hydroxy-3-methoxy-benzoic acid see **Nitrovanillic acid**.

Nitromalonic acid amide. $C_6H_5O_4N_2 = CH(NO_2)(CONH_2)_2$.

$k_A \times 10^4$ at $25^\circ = 5.9$; diminishes on diln.

$\mu(128) = 90.9$, $(512) = 157.3$; **745**; **1567**.

Nitromalonic acid diethyl ester. $C_7H_{11}O_6N = CH(NO_2)(CO_2Et)_2$.

$k_A \times 10^4$ at $25^\circ = 7.3$.

$\mu(81.6) = 81.2$, $(163.1) = 108.4$; **745**; **1567**.

Nitromethane. $CH_3O_2N = Me.NO_2$.

$\kappa \times 10^7$ at $0^\circ = 4.43$; b. p. 101.5° @ 757 mm.; **1843**; - **1844**. At $18^\circ = 6.4$; **291**. At $25^\circ = 5.44$; **1843**; - **1844**, **1423a**.

$k_A \times 10^{12}$ at 25° is about 7; **1092**.

Cond.; **780**, **1092**. At 25° , $\Lambda(10.3) = 0.003$, $(\infty) = 389$; **1092**.

In NH_3 ; **607**. In Et alc.; **754**. In $MeNH_2$, fair cond.; **637**. In pyridine, no cond.; **754**.

Cond. with $Ba(OH)_2$; **780**. As solvent; **291**, **1423a**, **1844**, **1848**, **1853a**.

Na.A at 25° , $\Lambda(32) = 84.4$, $(1024) = 108.6$; **1686**. In NH_3 ; **610**.

iso-Nitromethane. CH_3O_2N .

Very weak acid (cond.); **780**.

Nitron see **Diphenyl-endanilodihydro triazole**.

1-(α)-Nitronaphthalene. $C_{10}H_7O_2N = C_{10}H_7.NO_2$.

In H_2S , no cond.; **27**.

Nitroopianic acid. $C_{10}H_9O_7N = (MeO)_3C_6H(NO_2)(CHO).CO_2H$.

$[CO_2H = 1$; $OMe = 2, 3$; $NO_2 = 5$; $CHO = 6]$

$k_A \times 10^6$ [at 25°] = 2.9; **1684**, **1906**.

$\Lambda(256) = 10.1$, $(1024) = 19.5$, $(\infty) = 375$; **1684**.

o-Nitrophenol. $C_6H_5O_2N = NO_2.C_6H_4.OH$.

$k_A \times 10^8$ at $0^\circ = 6$ aq.; **733**. At $18^\circ = 5.6$ (cond. and hydrol.); **524**.

At $25^\circ = 6.8$; **847**; = 5.6; **746**; = 7 aq.; **733**; = 40; **70**. At $35^\circ = 8$ aq.; **733**.

Cond.; **614**, **1362**. At 25° , $\Lambda(100) = 1$, $(800) = 2.6$, $(\infty) = 355$; **847**.

In HBr , HCl and HI , fair cond.; **1897**. In H_2S , no cond.; **27**, **1897**. In NH_3 ; **604**, **607**. In Et alc.; **1508**, **1718**. In pyridine; **754**.

Cond. with $NaOH$; **1508**, **1718**. With cinchonine; **1620**.

m-Nitrophenol. $C_6H_5O_2N$.

$k_A \times 10^8$ at $10^\circ = 0.33$. At $15^\circ = 0.39$; **1150a**. At $25^\circ = 1.0$; **847**; = 0.53; **1150a**, **524**; **70**. At $40^\circ = 0.77$. At $50^\circ = 0.95$; **1150a**.

Cond.; **614**, **1362**. At 25° , $\Lambda(50) = 0.21$, $(200) = 0.56$, $(\infty) = 355$; **847**.

In Et alc.; **1508**, **1718**. In pyridine; **754**.

Cond. with $NaOH$; **1508**, **1718**.

p-Nitrophenol. $C_6H_5O_2N$.

$k_A \times 10^8$ at $0^\circ = 5$ aq.; **733**. At $10^\circ = 4.5$ (hydrol.). At $15^\circ = 5.2$ (hydrol.); **1144**. At $18^\circ = 5.8$ (cond. and hydrol.); **524**; $= 23$ (colorim.); **1562**. At $25^\circ = 6.4$ (solub.); **1116**; (cond.); **847**; $= 7.0$ (hydrol.); **1144**; $= 4.4$ (catal.); **733** and **1150**; $= 10$ (neutral.); **299**; (cond.); **733**; - also **70**, **746**. At $35^\circ = 15$ aq.; **733**. At $40^\circ = 10.2$ (hydrol.). At $50^\circ = 12.7$ (hydrol.); **1144**.

Cond.; **614**, **655**, **733**, **1144**, **1362**. At 25° , $\Delta(32) = 0.5$, $(512) = 2.2$, $(\infty) = 355$; **847**.

In NH_3 ; **609**; qual.; **608**. In Et alc.; **1508**, **1718**. In pyridine; **754**.

Cond. with NaOH; **299**, **1508**, **1718**. With cinchonine; **1620**. With trimethyl-pyridine; **1144**.

Na.A at 25° , $\Delta(231.1) = 79.4$, $(923.0) = 81.8$; **1144**. At $0^\circ - 35^\circ$; **733**. At $10^\circ - 50^\circ$; **1144**; **-655**.

p-Nitrophenol methyl ether see **p-Nitroanisole**.**o-Nitrophenol-4-sulphonic acid.** $C_6H_4O_6NS$.

K.A, cond. alone and with NaOH in Et alc.; **1718**.

o-Nitrophenoxy-acetic acid. (o-Nitrophenyl-glycollic acid).

$C_8H_7O_5N = NO_2.C_6H_4O.CH_2.CO_2H$.

$k_A \times 10^8$ at $25^\circ = 1.58$.

$\Delta(64) = 95.1$, $(1024) = 244.6$, $(\infty) = 351$; **1370**.

p-Nitrophenoxy-acetic acid. (p-Nitrophenyl-glycollic acid).

$C_8H_7O_5N$.

$k_A \times 10^8$ at $25^\circ = 1.56$; diminishes on diln.

$\Delta(128) = 125.6$, $(1024) = 241.6$, $(\infty) = 351$; **1370**.

Nitrophenoxy-malonic acid see **Bis-nitrophenoxy-malonic acid**.**Nitrophenyl-glycollic acid** see **Nitrophenoxy-acetic acid**.**m-Nitrophenyl-nitromethane.** $C_7H_5O_4N_2 = NO_2.C_6H_4.CH_2.NO_2$.

At 25° , $\mu(600) = 5-6$; **1092**; **844**.

The salts are from the isomeric $NO_2.C_6H_4.CH.NO.OH$.

At 25° , $\mu(320) = 132$; **844**.

Na.A; **1092**.

p-Nitrophenyl-nitrosoamine. $C_6H_5O_2N_3 = NO_2.C_6H_4.NH.NO$.

Cond. showing change to isomeric diazo compound; **501**.

o-Nitro-phenylpropionic acid. $C_9H_5O_4N = NO_2.C_6H_4.C:C.CO_2H$.

$k_A \times 10^8$ at $25^\circ = 1.08$; diminishes on diln.

$\Delta(256) = 272$, $(1024) = 322$, $(\infty) = 349$; **1371**.

In NH_3 , qual.; **606**.

Nitrophenyl-trimethyl- see **Trimethyl-nitrophenyl-****3-Nitro-o-phthalic acid.** (α -Nitrophthalic acid).

$C_8H_5O_6N = NO_2.C_6H_3(CO_2H)_2$. [$CO_2H = 1,2$]

$k_A \times 10^3$ at 25° is about 1.3. = 1.2; aq. used for soln. was impure; 1372; = 1.3; 1909. In 1911 the value in 1372 is considered the better value.

Second $k_A \times 10^5 = 4.0$; 1911.

At 25° , $\mu(32) = 164$, $(1024) = 342$, $(\infty) = 352$; 1372.

Mg.A; 1836. - Na.A. - 2Na.A at 25° , $\mu(32) = 76$, $(1024) = 93$; 1838.

3-Nitro-o-phthalic acid 1-mono methyl ester.

$C_9H_7O_6N$. [$CO_2Me = 1$; $CO_2H = 2$.]

$k_A \times 10^3$ at $25^\circ = 1.68$; diminishes on diln.; m. p. 157° .

$\mu(63.9) = 235.4$, $(512.8) = 336.2$, $(\infty) = 375$; 1909, 1938.

3-Nitro-o-phthalic acid 2-mono methyl ester.

$C_9H_7O_6N$. [$CO_2H = 1$; $CO_2Me = 2$.]

$k_A \times 10^3$ at 25° is about 2; diminishes on diln.; not perfectly pure; m. p. $146^\circ - 149^\circ$.

$\mu(128) = 151.3$, $(1026) = 270.6$, $(\infty) = 375$; 1909, 1938.

4-Nitro-o-phthalic acid. (β -Nitrophthalic acid). $C_8H_5O_6N$.

$k_A \times 10^3$ at $25^\circ = 7.7$; m. p. $160^\circ - 160.5^\circ$; 1909; = 6; aq. used for soln. was impure; 1372.

Second $k_A \times 10^5 = 4.0$; 1911.

At 25° , $\mu(32) = 146.1$, $(1028) = 353.3$, $(\infty) = 376$; 1909.

4-Nitro-o-phthalic acid 1-mono ethyl ester.

$C_{10}H_9O_6N$. [$CO_2Et = 1$; $CO_2H = 2$.]

$k_A \times 10^3$ [at 25°] = 3.05; m. p. 127° ; 1932.

4-Nitro-o-phthalic acid 2-mono ethyl ester.

$C_{10}H_9O_6N$. [$CO_2H = 1$; $CO_2Et = 2$.]

$k_A \times 10^3$ [at 25°] = 5.2; m. p. 137° ; 1932.

4-Nitro-o-phthalic acid ?-mono methyl ester. $C_9H_7O_6N$.

$k_A \times 10^3$ at $25^\circ = 4.8$; diminishes on diln.; m. p. $128^\circ - 129^\circ$.

$\mu(64) = 157.9$, $(1029) = 314.2$, $(\infty) = 375$; 1909.

2-Nitro-p-phthalic acid. (2-Nitroterephthalic acid).

$C_8H_5O_6N = NO_2.C_6H_3(CO_2H)_2$. [$CO_2H = 1, 4$.]

$k_A \times 10^3$ at $25^\circ = 1.87$; 1909.

Second $k_A \times 10^4 = 2.00$; 1911.

At 25° , $\mu(32) = 199.3$, $(256.4) = 333.9$, $(\infty) = 376$; 1909.

2-Nitro-p-phthalic acid 1-mono methyl ester.

$C_9H_7O_6N$. [$CO_2Me = 1$; $CO_2H = 4$.]

$k_A \times 10^4$ at $25^\circ = 7.7$; diminishes on diln.; m. p. $174^\circ - 175.5^\circ$.

$\mu(257) = 133.6$, $(1028) = 213.2$, $(\infty) = 375$; 1909.

2-Nitro-p-phthalic acid 4-mono methyl ester.

$C_9H_7O_6N$. [$CO_2H = 1$; $CO_2Me = 4$.]

$k_A \times 10^3$ at $25^\circ = 1.98$; diminishes on diln.; m. p. $133^\circ - 134^\circ$.

$\mu(64) = 247.4$, $(1027) = 355.4$, $(\infty) = 375$; 1909.

Nitropropane. $C_3H_7O_2N = Et.CH_2.NO_2$. B. p. $125^\circ-127^\circ$.

Na.A at 25° , $\Lambda(32)=67.8$, $(1024)=80.8$; too high, on account of increase of cond. on standing; **1686**.

2-Nitropropane. (Nitro-*iso*-propane). $C_3H_7O_2N = Me.CH(NO_2).Me$. B. p. $115^\circ-120^\circ$.

Na.A at 25° , $\Lambda(32)=65.0$, $(1024)=93.1$; approximate values; different measurements do not agree; **1686**.

α -Nitropropionic acid ethyl ester. $C_5H_9O_4N = Me.CH(NO_2).CO_2Et$.

$k_A \times 10^7$ at $0^\circ=0.67$; **1567**. At $25^\circ=4.6$; diminishes on diln.; **1092, 1567**.

At 25° , $\Lambda(39.7)=1.6$, $(158.7)=2.7$, $(\infty)=[380]$; **1092**.

Na.A, cond. with HCl; **1092, 1567**.

The preceding salt is formed from an isomeric ester $Me.C.NO.OH.CO_2Et$, $k_A \times 10^4$ at $0^\circ=5.85$, extrapolated from cond. of Na.A + HCl. It changes in soln. to the true ester; **1567**.

β -Nitropropionic acid. $C_3H_5O_4N = CH_2(NO_2).CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ=1.62$; diminishes on diln. $\Lambda(32)=24.9$, $(512)=86.3$, $(\infty)=358$; m. p. $65^\circ-67^\circ$; **1840**.

Nitropropionic aldehyde phenylhydrazone.

$C_9H_{11}O_2N_2 = Et.NO_2.C:N_2H.Ph$.

No cond. in aq. soln.; m. p. $98.5^\circ-99.5^\circ$; **78**.

Nitroprussic acid see **Hydronitroprussic acid**.

2-Nitroresorcinol. (2-Nitro-1,3-dihydroxy-benzene).

$C_6H_5O_4N = NO_2.C_6H_3(OH)_2$.

$k_A \times 10^5$ at $25^\circ=1.3$.

$\mu(299)=21.3$, $(1196)=40.8$, $(\infty)=354$; **70**.

4-Nitroresorcinol. (4-Nitro-1,3-dihydroxy-benzene). $C_6H_5O_4N$.

$k_A \times 10^6$ at $25^\circ=1.2$.

$\mu(120)=3.9$, $(960)=12$, $(\infty)=354$; **70**.

Nitrosalicylic acid see **Nitro-hydroxy-benzoic acid**.

Nitrosoacetic acid see **Oximino-acetic acid**.

***iso*-Nitrosoacetoacetic acid ethyl ester.**

$C_6H_9O_4N = Me.CO.C(:NOH)CO_2Et$.

$k_A \times 10^8$ at $0^\circ=4.0$ aq. At $18^\circ=7.3$ aq.; **1296**. At $25^\circ=8.6$ aq.; m. p. $58^\circ-59^\circ$; **1296**; $=7.0$; **1567**. At $35^\circ=10.9$ aq. At $40^\circ=11.8$ aq.; **1296**.

At 25° , $\Lambda(32)=0.66$, $(64)=0.97$, $(\infty)=395.3$; **1296**.

Na.A at 25° , $\Lambda(32)=67.6$, $(1024)=79.7$; **1296; 1567**.

***iso*-Nitrosoacetone.** $C_3H_5O_2N = Me.CO.CH(NO_2H)$.

$k_A \times 10^9$ at 18° is about 3 (colorim.). At $25^\circ=3.8$ (catal.); $=3$ (cond.); m. p. 66° ; **1141, 1143**; $=2.7$ (catal.); **752; - 547, 1092**.

$k_B \times 10^{14}$ at 25° is less than 1 (catal.); **1141, 1143**.

- At 25°, $\Lambda(21.6)=0.12$, $(43.2)=0.18$, $(\infty)=384$; **1143**, **547**, **1092**.
 Na.A at 25°, $\Lambda(32)=68.8$, $(1024)=81.2$; **547**.
- β -Nitroso-benzylhydroxylamine.** $C_7H_9O_2N_2=PhCH_2.N(NO)OH$.
 $k_A \times 10^6$ at 0°=5.8. At 25°=6.5.
 At 25°, $\mu(512)=19.6$; **736**.
- 6-Nitroso-m-cresol.** (Toluquinone-o-oxime).
 $C_7H_7O_2N=Me.C_6H_4(NO).OH$.
 $k_A \times 10^7$ at 25°=4; diminishes on diln.
 $\Lambda(128)=2.5$, $(1024)=6.6$.
 Na.A at 25°, $\Lambda(32)=65.9$, $(1024)=76.6$; **547**.
- Nitrosocyano-** see **Cyanonitroso-**
- iso-Nitrosodiketo-hydrindene.** $C_9H_5O_2N=C_6H_4(CO)_2:C:NOH$.
 $k_A \times 10^6$ at 25°=1.7; **752**; **1188**.
 $\Lambda(256)=7.7$, $(1024)=14.4$, $(\infty)=354$; **752**.
 Na.A at 25°, $\Lambda(32)=67.8$, $(1024)=80.4$; **752**.
- Nitrosodimethyl amine.** (Nitrosodimethylin).
 $C_2H_6ON_2=Me_2N.NO$.
 $\kappa \times 10^5$ at 0°=1.192. At 25°=1.615; b. p. 149°–149.5° @ 755 mm.; **1844**, **1843**. At 19°=20; **1853c**.
 At 19°, $\Lambda(15.0)=0.41$; **1853c**.
 Cond. as solvent; **1844**, **(1853c)**.
- p-Nitroso dimethyl aniline.** $C_8H_{10}ON_2=NO.C_6H_4.NMe_2$.
 $k_B \times 10^{10}$ at 25°=1.95 (part.); **548**.
- Nitrosodimethylin** see **Nitrosodimethyl amine**.
- Nitrosomethyl-** see also **Methylnitroso-**
- Nitrosomethylacetone** see **iso-Nitrosomethylethyl ketone**.
- p-Nitroso-methylaniline.** $C_7H_9ON_2=NO.C_6H_4.NHMe$.
 $k_A \times 10^{13}$ at 6°=1.12 (part.).
 $k_B \times 10^{10}$ at 6°=1.63 (part.); **548**.
- iso-Nitrosomethylethyl ketone.** (Nitrosomethylacetone).
 $C_4H_7O_2N=Me(NO.H):C.COMe$.
 $k_A \times 10^{10}$ at 18°=1.3 aq.; m. p. 76°.
 Na.A at 25°, $\Lambda(100)=83.4$; **1296**.
- iso-Nitrosomethylpropyl ketone.** (Ethyl *iso*-nitrosoacetone).
 $C_5H_9O_2N=MeCO.C(:NOH)Et$.
 $k_A \times 10^{10}$ at 25°=3.1 (catal.); **752**.
- 4-Nitroso-1-naphthol.** (α -Naphthoquinone oxime. **α -Nitroso- α -naphthol.** 4-Nitroso-1-hydroxy-naphthalene).
 $C_{10}H_7O_2N=NO.C_{10}H_6.OH$.
 $k_A \times 10^7$ at 25°=2.6.
 $\mu(1024)=5.7$, $(2048)=8$, $(\infty)=[355]$; **1748**.
- 2-Nitroso-1-naphthol.** (β -Naphthoquinone oxime. **β -Nitroso- α -naphthol.** $C_{10}H_7O_2N$.

$k_A \times 10^8$ at $25^\circ = 2.6$.

$\mu(512) = 1.4$, $(1024) = 1.8$; **1748**.

1-Nitroso-2-naphthol. (β -Naphthoquinone oxime. α -Nitroso- β -naphthol.) $C_{10}H_7O_2N$.

$k_A \times 10^8$ at $25^\circ = 2.6$.

$\mu(512) = 1.4$, $(1024) = 1.8$; **1748**.

In NH_3 , qual.; **606**.

γ -iso-Nitroso- β -nitrosoamino-crotonic acid ethyl ester. $C_6H_9O_4N_2$.

$NH_4.A$ ($= C_6H_{12}O_4N_2$), at 18° , κ of 0.511 g. in 50.1 cc. aq. $= 3.7 \times 10^{-3}$; m. p. 170° ; **526**.

4-Nitrosoorcinol. $C_7H_7O_2N = Me.C_6H_3(OH)_2.NO$.

Yellow isomer; dec. 163° .

$k_A \times 10^4$ at $25^\circ = 3.7$; **777**; $= 3.3$; **810**; $= 4.5$; **547**.

At 25° , $\mu(512) = 108$, $(1024) = 130$; **777**. - **782**.

In Et alc.; **777**, **782**.

$K.A$, $\Delta(32) = 88.8$, $(1024) = 99.8$, - $Na.A$, $\Delta(32) = 67.3$, $(256) = 73.5$; **810**.

Red isomer; dec. $124^\circ - 125^\circ$.

$k_A \times 10^4$ at $25^\circ = 5.1$.

Cond. in aq. and in Et alc.; **777**. **547**. At 25° , $\mu(128) = 85$, $(1024) = 190$; **777**.

Nitroso-oxindole see **Isatoxime**.

p-Nitrosophenol. (Benzoquinone mono oxime).

$C_6H_5O_2N = NO.C_6H_4.OH = O:C_6H_4:NOH$.

$k_A \times 10^7$ at $25^\circ = 3$; increases, then diminishes on diln.; **547**; $= 7.5$; **1748**.

Cond. in aq.; **782**. At 25° , $\mu(128) = 2.1$, $(1024) = 6.4$; **547**.

In pyridine; **754**. In Et alc.; **782**.

$Na.A$ at 25° , $\mu(32) = 67.2$, $(1024) = 77.3$; **547**.

Nitrosophenyl- see **Phenylnitroso-**

Nitrosopropionic acid see **Oximinopropionic acid**.

iso-Nitrososuccinic acid see **Oximosuccinic acid**.

iso-Nitrosothiohydantoin. $C_2H_3O_2N_2S$.

$k_A \times 10^8$ at $25^\circ = 5$.

$\Delta(512) = 1.8$, $(1024) = 2.8$, $(\infty) = 358$.

$Na.A$ at 25° , $\Delta(32) = 77.7$, $(1024) = 86.7$; **752**.

Nitroso-urethane see **anti-Diazo-urethane**.

4-Nitro-2-sulphobenzoic acid ethyl ester.

$C_9H_9O_7NS = NO_2.C_6H_3(SO_3H).CO_2Et$. [$CO_2Et = 1$.]

As strong as HCl , (colorim.); **950**.

o-Nitrotoluene. $C_7H_7O_2N = Me.C_6H_4.NO_2$.

$\kappa \times 10^7$ at 25° is less than 1.8; **1106**, **1107**.

In HBr ; **1646**. In HBr and HCl , fair cond. In H_2S , no cond.; **1897**. In NH_3 , qual.; **606**.

Cond. with inorg. and organic salts; 1106, 1107, 1893. As solvent; (1893).

m-Nitrotoluene. $C_7H_7O_2N$.

$\kappa \times 10^7$ at 25° is less than 1.8.

As solvent; 1106, 1107.

p-Nitrotoluene. $C_7H_7O_2N$.

In HBr, good cond. In H_2S , no cond.; 1897. In NH_3 , qual.; 606.

m-Nitrotoluene sulphonic acid. $C_7H_7O_6NS = Me.C_6H_4(NO_2).SO_3H$.

K.A. at 25° ; κ of 0.1 g. in 50 cc. aq. $= 7.7 \times 10^{-4}$; 456a.

3-Nitro-4-toluidine. $C_7H_8O_2N_2 = Me.C_6H_3(NO_2).NH_2$.

[Me=1; NH_2 =4; NO_2 =3.]

$k_B \times 10^{14}$ at $25^\circ = 5.4$ (solub.); 659.

2-Nitro-4-toluidine-5-sulphonic acid.

$C_7H_8O_6N_2S = Me.C_6H_3(NO_2)(NH_2).SO_3H$. [HSO_3 =5.]

At 25° , $\Lambda(128)=301.9$, (1024)=318.9, $(\infty)=[355]$; 492.

2-Nitro-4-tolylhydrazine-5-sulphonic acid.

$C_7H_8O_6N_3S = Me.C_6H_3(NO_2)(NHNH_2).SO_3H$.

[Me=1; NO_2 =2; $NHNH_2$ =4; HSO_3 =5.]

$k_A \times 10^4$ at $25^\circ = 1.3$; diminishes on diln.

$\Lambda(512)=79.6$, (1024)=97.9, $(\infty)=352$; 492.

Nitro-trichloro-methane. (Chloropicrin). $CO_2NCl_3 = NO_2.C.Cl_3$.

$\kappa \times 10^8$ at 18° is less than 6; 291.

In NH_3 , qual.; 606.

As solvent; 291.

Nitrotrimethyl-aniline see Trimethyl-nitrophenyl ammonium hydroxide.

Nitro-uracil. $C_4H_3O_4N_3$.

$k_A \times 10^6$ at $25^\circ = 3.25$.

$\mu(128)=7.2$, (1024)=20.0, $(\infty)=356$; 1748.

Nitro-uracilcarboxylic acid. $C_5H_3O_6N_3$.

At 25° , $\mu(32)=318.7$, (1024)=349.6.

Na.A. - 2Na.A at 25° , $\mu(32)=81.3$, (1024)=99.9; 1748.

Nitro-urea. $CH_3O_3N_3 = NH_2.CO.NH(NO_2)$.

$k_A \times 10^5$ at $0^\circ = 3.9$; 141, 143. At $10^\circ = 5.5$. At $20^\circ = 7.1$. At $30^\circ = 8.6$. At 40° is over 9. From 0° to 20° k diminishes, then increases on diln.; at 30° and 40° k diminishes on diln. because of dec.; 143; [quoted?]; 757.

At 20° , $\Lambda(32)=19$, (512)=69.0, $(\infty)=403.2$; 143.

Na.A at 20° , $\Lambda(1000)=151.8$; - also at 0° - 40° ; 143.

Nitro-urethane see Nitrocarbamic acid ethyl ester.

Nitrous acid. HNO_2 . [The references to this are incomplete.]

$k_A \times 10^4$ at $20^\circ = 4.5$; 1601; (hydrol.); 578. [At 25°]= $6.4 \pm 10\%$; 139.

At 20° , $\Lambda(512)=151.2$, (1024)=190.5, $(\infty)=391.5$; 1601.

- Nitrous acid amyl ester.** (Amyl nitrite). $C_5H_{11}O_2N=NO_2.C_5H_{11}$.
 $\kappa \times 10^7$ at $18^\circ = 3.6$; **360**. At $25^\circ = 1.8$; **1106, 1107**; $\infty = 15$; **1569**.
 In HBr and HI, fair cond. In H_2S , no cond.; **1897**. In NH_3 ,
 qual.; **606**. In ether; **360**.
 Cond. with inorg. and organic salts; **1106, 1107, 1569**. As sol-
 vent; **1569**.
- Nitrous acid ethyl ester.** (Ethyl nitrite). $C_2H_5O_2N=NO_2.Et$.
 $\Lambda(512) = 152.6$, showing complete saponification; **578**.
- Nitro-iso-valeric aldehyde phenylhydrazone.**
 $C_{11}H_{15}O_2N_2 = (C_6H_5)(NO_2)C:N_2H.Ph$.
 α -) m. p. $51.5^\circ - 52^\circ$.
 β -) m. p. $92.5^\circ - 93^\circ$.
 In aq. soln., no cond.; **78**.
- Nitrovanillic acid.** (?-Nitro-4-hydroxy-3-methoxy-benzoic acid).
 $C_8H_7O_6N = NO_2.C_6H_3(OH)(OMe).CO_2H$. [$CO_2H = 1$.]
 $k_A \times 10^4$ at $25^\circ = 1.2$; diminishes on diln.
 $\Lambda(600) = 82.8$, $(1200) = 108.6$, $(\infty) = 353$; **175**.
- 6-Nitroveratric acid.** (6-Nitro-3,4-dimethoxy benzoic acid).
 $C_9H_9O_6N = NO_2.C_6H_3(OMe)_2.CO_2H$. [$CO_2H = 1$.]
 $k_A \times 10^3$ at $25^\circ = 3.6$; diminishes on diln.
 $\Lambda(126) = 170$, $(504) = 238.4$, $(\infty) = 351$; **175**.
- Norhemipinic acid dimethyl ether** see **Hemipinic acid**.
Noropianic acid dimethyl ether see **Opianic acid**.

O.

- Oak.** [The references to this are incomplete.]
 Cond. of soln. of bark; **146**.
- iso-Octinic acid.** $C_8H_{14}O_2$.
 $k_A \times 10^5$ at $25^\circ = 7.7$; m. p. $128^\circ - 129^\circ$.
 $\mu(256) = 45.6$, $(512) = 62.9$, $(\infty) = 350$; **1823, 1831**.
- Octoaspartic acid.** $C_{28}H_{42}O_{10}N_4$.
 Cond. with NaOH.
 $8K.A. - 4Na.A. - 6Na.A. - 8Na.A$ at 28° , $\mu(32) = 45.6$, $(1024) = 69.9$. Cond. with NaCl and NaOH; **1227**.
- Octyl alcohol.** $C_8H_{18}O$.
 In NH_3 , qual.; **606**.
- Octylmalonic acid.** $C_{11}H_{20}O_4 = CH(C_8H_{17})(CO_2H)_2$.
 $k_A \times 10^4$ at $25^\circ = 9.2$ aq.; diminishes on diln.
 Second $k_A \times 10^7 = 6.5$ (inversion).
 At 25° , $\mu(450) = 163.9$, $(1800) = 241.6$, $(\infty) = 349$; **1638**.
- Oenanthylic acid** see **Heptoic acid**.
Oenanthylic aldehyde see **Heptyl aldehyde**.
Oleander see **Nerium oleander**.

Oleic acid. $C_{18}H_{34}O_2 = C_{17}H_{33}.CO_2H$.

In benzene, no cond.; **935**. In amyl, Et and Me alc.; **438**.

Co.2A and Cu.2A in benzene, no cond.; **935**. - Cu.2A cond. with organic compounds; **1569**. - Mg.2A in commercial benzene; **931**. - Ni.2A in benzene, no cond.; **935**. - K.A in aq., Et and Me alc.; **438**. - Na.A at 25° , $\Lambda(32)=42.1$, $(512)=70.6$, $(1024)=84.4$; **945**. $\Lambda(32)=23$, $(512)=60$; **438**. At 18° - 75° ; **438**, **945**. In amyl, Et and Me alc.; **438**. In HCN, small cond.; **943**. Cond. of thin layer; **1480**.

Olive oil. [The references to this are incomplete.]

Cond.; **1010**. In commercial benzene; **931**. Cond. increased by radium rays; **1491**.

Opianic acid. (Dimethoxy-noropianic acid).

$C_{10}H_{10}O_5 = (MeO)_2.C_6H_2(CHO).CO_2H$. [CHO=1; CO_2H =2; MeO=3,4.]

$k_A \times 10^4$ at $18^\circ = 9.3$ (colorim.); **1563**. At $25^\circ = 8.8$; **1371**.

At 25° , $\Lambda(128)=99.9$, $(1024)=212.5$, $(\infty)=352$; **1371**.

Cond. not increased by boric acid; **1186**.

Orange II see *p*-Benzene sulphonic acid azo- β -naphthol.

Orange III see *p*-Dimethyl-aminoazobenzene sulphonic acid.

Orcinol. (3,5-Dihydroxy-toluene).

$C_7H_8O_2 = Me.C_6H_3(OH)_2$. [Me=1; OH=3,5.]

$k_A \times 10^8$ at 25° is over 3. $\mu(26)=0.1$, $(208)=0.9$, $(\infty)=355$; **70**.

Cond. alone and with NaOH; **1508**, **1718**.

In NH_3 , qual.; **606**.

Orcinolcarboxylic acid. (3,5-Dihydroxy-phenylacetic acid).

$C_8H_8O_4 = (HO)_2C_6H_3.CH_2.CO_2H$. [OH=3,5; $CH_2.CO_2H$ =1.]

Cond. decreased by $Ba(OH)_2$; **1719**.

In Et alc., alone and with NaOH; m. p. 165° ; **1508**, **1718**.

Orcyl aldehyde.

$C_8H_8O_3 = Me.C_6H_3(OH)_2.CHO$. [Me=1; OH=3,5; CHO=2.]

$k_A \times 10^8$ at $25^\circ = 4.1$; m. p. 179° ; **643**.

At 25° , $\mu(1024)=64$, $(\infty)=354$; **643**. - **1718**. Cond. increased by $Ba(OH)_2$; **1719**.

In Et alc., alone and with NaOH; **1508**, **1718**.

Orobanche hederacolia. [O. hederacolia? Ivy broom-rape.]. [The references to this are incomplete.]

Cond. of sap; **253**. Of stem and buds; **1326**.

Orsellic acid. (Orsellinic acid).

$C_8H_8O_4 = Me.C_6H_3(OH)_2.CO_2H$. [Me=1; CO_2H =2; OH=3,5.

Possibly Me=2; CO_2H =1.]

$k_A \times 10^4$ at $25^\circ = 1.3$; dec. 175° - 176° .

$\mu(128)=43.2$, $(1024)=103.6$, $(\infty)=358$; **809**. - **1508**, **1718**.

Cond. increased by $\text{Ba}(\text{OH})_2$; 1719. Cond. in aq. and in Et alc., with NaOH ; 1508, 1718.

p-Orsellic acid. (p. Orsellinic acid).

$\text{C}_8\text{H}_8\text{O}_4 = \text{Me}.\text{C}_6\text{H}_3(\text{OH})_2.\text{CO}_2\text{H}$. [Me=1; CO_2H =4; OH=3, 5.]

$k_A \times 10^3$ at $25^\circ = 4.1$; 1371. Measurement of 1371 confirmed; [no data]; 809.

At 25° , $\mu(128) = 307$, $(1024) = 355$, $(\infty) = 358$; 1371.

In Et alc., alone and with boric acid; 1185.

Orsellinic acid see **Orsellic acid**.

Ortho-formic acid triethyl ester. (Ethyl orthoformate).

$\text{C}_7\text{H}_{10}\text{O}_3 = \text{CH}(\text{OEt})_3$.

In NH_3 , qual.; 606.

Ovo-mucoid. [The references to this are incomplete.]

Cond. in HCl and in KOH shows it to be more basic than acid; 1506c.

Oxalacetic acid. $\text{C}_4\text{H}_4\text{O}_6$.

$k_A \times 10^2$ at $25^\circ = 1.33$; 926. See **Hydroxy-fumaric** and **Hydroxy-maleic acids**, the isomers into which this acid has been split.

Oxalacetic acid phenylhydrazone. $\text{C}_{10}\text{H}_{10}\text{O}_4\text{N}_2$.

$k_A \times 10^3$ at $25^\circ = 1$; dec. $95^\circ - 100^\circ$; 926. See the acid.

Oxaldihydroxamic acid. $\text{C}_2\text{H}_4\text{O}_4\text{N}_2 = \text{C}_2\text{O}_2(\text{NHOH})_2$.

$k_A \times 10^7$ [at 25°] = 2; increases on diln.

$\mu(32) = 0.9$, $(128) = 2.1$, $(\infty) = [380]$; 1353a.

Fe.A; 756.

Oxalic acid. $\text{C}_2\text{H}_2\text{O}_4 = \text{CO}_2\text{H}.\text{CO}_2\text{H}$.

k_A diminishes on diln. in all measurements.

$k_A \times 10^2$ at $18^\circ = 9$ (colorim.); 1562, 1563. At $20^\circ = 6$ aq.; 164.

At $25^\circ = 10$; 1371. Relative strength (colorim. etc.); 693, 1643.

Second $k_A \times 10^5 = 4.1$ (part.); = 4.9 (cond.); 370; = 1.6 (inversion); 1335.

At 0° , $\mu(32) = 169.8$, $(512) = 223.7$; 924; - 910. At 11.8° ; 924.

At 15° ; 1741. At $15^\circ - 25^\circ$; 171, 377, 591, 1122, 1123, 1211,

1577. At 25° , $\mu(32) = 267$, $(512) = 364$, $(1024) = 383$, $(\infty) =$

3657; 1371; $\mu(32) = 262.3$, $(512) = 349.9$; 924; - 691, 1023,

1270, 1495, 1508, 1518, 1718. At 35° ; 388a, 924. At 50° .

At 65° ; 388a. - See also, 401, 556.

In HCl , no cond.; 30. In H_2SO_4 ; 223, 750. In Me alc.; 1579,

2029. In Et alc.; 788, 789, 1579. In pyridine; 754.

Cond. with inorg. compounds; 171, 223, 556, 691, 692, 750, 1023,

1184, 1209, 1350, 1495, 1508, 1516, 1518, 1718. With or-

ganic compounds; 45, 378, 401, 556, 754, 1223, 1577, 1630,

2005. Under pressure of 1-500 atmospheres; 1427.

NH_4A ; 1550. - $2(\text{NH}_4)\text{A}$; 145a, 556, 823, 1519, 1577. In HCl , small cond.; 1645. - Ba.A ; 990, 991, 993, 1004. - Cd.A ; 990, 991, 993. - Ca.A ; 848, 990, 991, 993, 1004. - 2Ce.3A ; 1496. - Cr , see Double and complex salts, also Chromioxalic acid, and Chromium, complex salts. - Cb double salts; 1550. - Cu.A ; 1577. - 2Fe.3A ; 1577. - 2La.3A ; 1496. - Pb.A ; 216, 990, 991, 993. - Mg.A ; 990, 991, 993, 997, 1003. - 2Nd.3A ; 1496. - Ni.A ; 427. - K.A ; 164, 1519, 1550. - 2K.A ; 164, 171, 427, 692, 899, 997, 1023, 1174, 1338. 1516, 1519. - 2Pr.3A ; 1496. - 2Sa.3A ; 1496. - 2Ag.A ; 216, 990, 991, 993. - Na.A at 25° , $\mu(32)=97$, $(1024)=182$; 370; 1550, 1643, 1838. - 2Na.A at 25° , $\mu(32)=93$, $(1024)=113$; 1838; 370, 449, 495, 692, 1023, 1227, 1367. - Sr.A ; 990, 991, 993, 1004. - 2Tl.A ; 10, 216. - UO_2A ; 449. - 2Yb.3A ; 1496. - 2Yt.3A ; 1496. - Zn.A ; 990, 991, 993. - "Double" and complex salts. The number of atoms and of acid radicals is not given under this heading. NH_4 , K , Rb or Na with; - Al ; 1515, 1516; - with Sb ; 1519; - with Cr ; 971, 1192, 1198, 1515, 1516; - with Co ; 1948; - with Cb ; 1550; - with Fe ; 971, 1209, 1515, 1577, 1581a; - with Mo ; 691, 692, 1023, 1515, 1518; - with Ni ; 427; - with Ag ; 971; - with Te ; 1530a; - with W ; 692, 1023, 1515, 1516; - with V ; 1515, 1516.

Oxalic acid mono amide. (Oxamic acid).



$k_A \times 10^3$ at $25^\circ=8.5$; diminishes on diln. $\mu(32)=146.4$, $(512)=300.2$, $(\infty)=352$; 1371.

Oxalic acid di-amide. (Oxamide). $\text{C}_2\text{H}_4\text{O}_2\text{N}_2=\text{CONH}_2.\text{CONH}_2.$

In NH_3 , qual.; 606.

Hg salt, e. m. f.; 963.

Oxalic acid diethyl ester. $\text{C}_6\text{H}_{10}\text{O}_4=\text{CO}_2\text{Et}.\text{CO}_2\text{Et}.$

$\kappa \times 10^7$ at $25^\circ=7.12$; 1106, 1107; $=11$; 1569.

In HBr , good cond. In H_2S , fair cond.; 1897. In NH_3 , qual.; 606.

Cond. with inorg. and organic salts; 1106, 1107, 1569. Effect of temperature on cond.; 106. As solvent; 1106, 1569.

Oxalic acid dimethyl ester. $\text{C}_4\text{H}_6\text{O}_4=(\text{CO}_2\text{Me})_2.$

Effect of temperature on cond.; 106.

Oxalic acid nitrile see Cyanogen.

Oxaltoluidic acid see Tolyloxamic acid.

Oxaluric acid. $\text{C}_3\text{H}_4\text{O}_4\text{N}_2=\text{NH}_2\text{CO}.\text{NH}.\text{CO}.\text{CO}_2\text{H}.$

$k_A \times 10^3$ at $25^\circ=4.5$. $\mu(64)=284$, $(\infty)=360$; 1371. $k=0.3$. $\mu(64)=98.8$, $(1024)=144.5$; decomposes in soln.; 1748. [It is

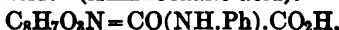
impossible to harmonize these measurements. The acid in 1371 may have been decomposed.]

NH_4A , in NH_3 , qual.; 606. NaA at 25° , $\mu(32)=168.2$; decomposes in soln.; 1748.

Oxamic acid see **Oxalic acid mono amide**.

Oxamide see **Oxalic acid di-amide**.

Oxanilic acid. (Anilinoxalic acid).



$k_A \times 10^3$ at $25^\circ=1.2$; 1371, 1334; (colorim.) 1773.

At 25° , $\mu(32)=161.2$, (1024)=322.7, $(\infty)=351$; 1371.

Oximino-acetic acid. (Aldoxime-*syn*-carboxylic acid. Nitrosoacetic acid). $\text{C}_2\text{H}_3\text{O}_3\text{N}=\text{H}.\text{C}(:\text{NOH})\text{CO}_2\text{H}$.

$k_A \times 10^3$ at $25^\circ=1$; 768;=1; diminishes on diln.; m. p. $140^\circ\text{--}141^\circ$ with dec.; 865.

$\mu(32)=59.4$, (1024)=227.6, $(\infty)=365$; 768.

NaA at 25° , $\mu(32)=75.6$, (1024)=92.0; 865.

α -Oximino-butyric acid. (Ethyl-*syn*-ketoxime carboxylic acid. Nitrosobutyric acid). $\text{C}_4\text{H}_7\text{O}_3\text{N}=\text{Et}.\text{C}(:\text{NOH})\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ=8$; diminishes on diln.;=8.67; 768;=7.8; m. p. 154° with dec.; 865.

$\mu(32)=55$, (1024)=209.1, $(\infty)=359$; 768. $\mu(32)=55$, $(\infty)=379$; 865.

NaA at 25° , $\mu(32)=69.6$, (1024)=85.0; 865.

β -Oximino-butyric acid. $\text{C}_4\text{H}_7\text{O}_3\text{N}$.

k_A at 25° is probably about the same as that of the α -acid, as shown by cond. of the anhydride; 768.

β -Oximinobutyric anhydride. (Methyl-*syn*-ketoxime carboxylic acid.

Methylisoxazolone or Methyl-*syn*-oxazolone). $\text{C}_4\text{H}_5\text{O}_3\text{N}$.

$k_A \times 10^4$ at $25^\circ=5$; diminishes on diln.

At 25° , $\mu(512)=142.5$, (1024)=155.1, $(\infty)=355$. The cond. is probably due to presence of the acid; 768.

Oximino-cyanoacetic acid see **Cyanonitrosoacetic acid**.

Oximinomethyl- see **Methyloximino-**

α -Oximino-propionic acid. (Methyl-*syn*-ketoxime carboxylic acid. Nitrosopropionic acid). $\text{C}_3\text{H}_5\text{O}_3\text{N}=\text{Me}.\text{C}:\text{NOH}.\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ=5$; diminishes on diln.=5.0; m. p. $176^\circ\text{--}178^\circ$; 1840;=4.9; m. p. $180^\circ\text{--}181^\circ$ with dec.; 865;=5.3; 768.

$\mu(32)=43.7$, (1024)=182.5, $(\infty)=359$; 768. $\mu(32)=45$, $(\infty)=381$; 865.

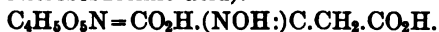
NaA at 25° , $\mu(32)=72.0$, (1024)=89.0; 865.

β -Oximino-propionic acid. (Aldoxime-*anti*-acetic acid).



$k_A \times 10^4$ at $25^\circ=1$; diminishes on diln. $\mu(64)=28.1$, (1024)=90.8, $(\infty)=359$; 768.

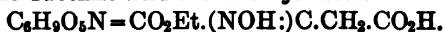
***α*-Oximino-succinic acid.** (Ketoxime-*anti*-acetic-carboxylic acid. *iso*-Nitrososuccinic acid).



$k_A \times 10^3$ at $25^\circ = 1.1$; increases on diln.

$\mu(32) = 60.5$, $(1024) = 249.7$, $(\infty) = 357$; **768**.

***α*-Oximino-succinic acid mono ethyl ester.**



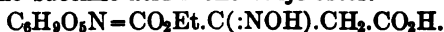
$k_A \times 10^4$ at $25^\circ = 1.9$.

$\mu(32) = 26.6$, $(1024) = 125.9$, $(\infty) = 357$; **768**.

***β*-Oximino-succinic acid.** $\text{C}_4\text{H}_5\text{O}_5\text{N} = \text{CO}_2\text{H} \cdot \text{C}(:\text{NOH}) \cdot \text{CH}_2 \cdot \text{CO}_2\text{H}.$

In soln. decomposes instantaneously to cyanoacetic acid; **768**.

***β*-Oximino-succinic acid mono ethyl ester.**



$k_A \times 10^3$ at $25^\circ = 5.37$

$\mu(32) = 120.1$, $(1024) = 287$, $(\infty) = 357$; **768**.

***α*-Oximino-valeric acid.** (Nitrosovaleric acid. Propyl-*syn*-ketoxime carboxylic acid). $\text{C}_5\text{H}_9\text{O}_5\text{N} = \text{Pr} \cdot \text{C}(:\text{NOH}) \cdot \text{CO}_2\text{H}.$

$k_A \times 10^4$ at 25° is over 6; diminishes on diln.; **768**; m. p. 140° with dec.; **865**.

$\mu(32) = 49$, $(1024) = 190.3$, $(\infty) = 356$; **768**. $\mu(32) = 49.4$, $(\infty) = 378$; **865**.

Na.A at 25° , $\Lambda(32) = 68.7$, $(1024) = 84.5$; **865**.

***γ*-Oximino-valeric acid.** (Methyl-*syn*-ketoximepropionic acid).



$k_A \times 10^5$ at $25^\circ = 2.7$; diminishes, then increases on diln. $\mu(32) = 10.4$, $(1024) = 45.6$, $(\infty) = 356$; **768**.

Oxy- see also **Hydroxy-**. Compounds containing an OH group are called hydroxy.

***p*-Oxyazobenzene.** (Benzeneazophenol. Hydroxy-azobenzene.)



$k_A \times 10^9$ at $25^\circ = 4.9$ (part.); **545**.

At 25° , $\mu(1100) = 1$; **546**.

In pyridine; **754**.

Na.A at 25° , $\mu(32) = 62.6$, $(1024) = 74.2$. The salt, formed from the hydroxy compound [= acid + H_2O] is $\text{PhNH} \cdot \text{N} \cdot \text{C}_6\text{H}_4(\text{OH})(\text{ONa})$, and is the salt of a strong acid; **546**.

Oxy-*iso*-butyryl-*β*-anilino-*iso*-butyric anhydride. $\text{C}_{14}\text{H}_{17}\text{O}_5\text{N}.$

Na.A at 25° , $\Lambda(32) = 60.4$, $(1024) = 70.5$; m. p. of the anhydride is 120° ; **1840**.

***β*-Oxy-*iso*-butyryl-*o*-toluidino-*iso*-butyric anhydride.** $\text{C}_{15}\text{H}_{19}\text{O}_5\text{N}.$

Na.A at 25° , $\Lambda(32) = 59.6$, $(1024) = 69.4$; m. p. of the anhydride is 95° ; **1840**.

- β -Oxy-iso-butyryl-p-toluidino-iso-butyric anhydride.** $C_{15}H_{19}O_3N$.
Na.A at 25° , $\Lambda(32)=59.2$, $(1024)=69.0$; m. p. of the anhydride is 170° ; 1840.
- 2-Oxy-1,6-dihydro-purine.** (Desoxyxanthine). $C_5H_4ON_4$.
 $k_A \times 10^{12}$ at $25^\circ=2.97$ (catal.); 1707.
- Oxyhaemoglobin.** [The references to this are incomplete.]
Cond. in aq. at 0° - 39° ; 625, 1655a.
- Oxymenthyllic acid.** $C_{10}H_{18}O_3$.
 $k_A \times 10^5$ at $25^\circ=2.1$; diminishes on diln.
 $\mu(42.7)=10.5$, $(1366.4)=54.9$, $(\infty)=351$; 1372.
- Oxymethylene-cyanoacetic acid** see **Cyanoformylacetic acid.**
- Oxypyridine.** C_5H_5ON .
Cond. less than that of phenol; 733.
- Oxyuracil.** (Hydroxy-uracil) $C_4H_4O_3N_2$.
 $k_A \times 10^9$ at $25^\circ=2.5$ (catal.); 1996.

P.

Palladium.

Complex salt; 1762.

See also the following compounds.

Palladium cyanic acid. $C_4H_2N_4Pd=H_2Pd(CN)_4$.2K.A at 25° , $\Lambda(32)=113.1$, $(1024)=134.0$; 150.**Palladium thiocyanic acid.** $C_4H_2N_4S_4Pd=H_2Pd(SCN)_4$.2K.A at 25° , $\Lambda(32)=106.7$, $(1024)=126.3$; 150.**Palmitic acid.** $C_{16}H_{32}O_2=C_{15}H_{31}.CO_2H$.In HBr, no cond.; 30. In $MeNH_2$, fair cond.; 637.K.A; 945. - Na.A at 89.75° , $\Lambda(20)=86.0$, $(100)=135.3$; 1229a.**Pancreatic juice.** [The references to this are incomplete.]

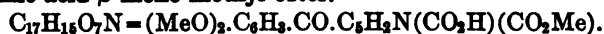
Concentration of H and OH ions; 587.

Cond. with gelatin; 807, 808.

Papaveric see **Papaverinic.****Papaverine.** $C_{20}H_{21}O_4N$. $k_B \times 10^7$ at $18^\circ=2.8$; 1224. At $20^\circ=0.9$ (colorim.); 1779. At $25^\circ=500$ aq. [probably too high.]; 1241.At 18° , $\mu(7634)=8.9$, $(\infty)=196$; 1224. At 25° , $\mu(6130)=81.1$, $(\infty)=190.5$; 1241.

In HCN, no cond.; 943.

B.HCl at 18° , $\mu(260)=82.5$, $(1040)=85.9$; 1224.**Papaverinic acid.** $C_{16}H_{13}O_7N=(MeO)_2.C_6H_3.CO.C_5H_2N(CO_2H)_2$. $k_A \times 10^3$ at $25^\circ=1$; increases on diln.; 966, 1372.Second $k_A \times 10^5=7$; 1911.At 25° , $\mu(256)=273$, $(1024)=340.2$, $(\infty)=350$; 966.

Papaverinic acid β -mono methyl ester.

$k_A \times 10^3$ at $25^\circ = 4 \pm 20\%$; saponifies in soln.; m. p. 156° ; **1909**; $\mu(593) = 280.2$, $(1190) = 303.2$, $(\infty) = 372$; **1909**. $\mu(512) = 290.2$, $(\infty) = 350$; **966**.

Papaverinic acid γ -mono methyl ester. $\text{C}_{17}\text{H}_{15}\text{O}_7\text{N}$.

$k_A \times 10^3$ at $25^\circ = 6 \pm 20\%$; saponifies in soln.; m. p. 195.5° – 197° ; **1909**, **966**.

$\mu(910) = 322$, $(\infty) = 372$; **1909**.

Papaverinic acid oxime. (Papaverinic ketoxime). $\text{C}_{16}\text{H}_{14}\text{O}_7\text{N}_2$.

At 25° , $\mu(463.5) = 380.5$; **175**.

Papaverinic acid phenylhydrazone. $\text{C}_{22}\text{H}_{19}\text{O}_6\text{N}_2$.

$k_A \times 10^3$ at $25^\circ = 4.7$.

$\mu(2124) = 319.6$, $(\infty) = 350$; **175**.

Parabanic acid. $\text{C}_8\text{H}_5\text{O}_3\text{N}_2$.

$k_A \times 10^7$ at $25^\circ = 7.5$; **1996**.

Cond.; **1748**. At 25° , $\mu(32) = 2.1$; **1996**.

In NH_3 , qual.; **606**.

Hg salt, e. m. f.; **963**.

Paraffine. [The references to this are incomplete.]

Effect of radium on cond.; **148**.

Paraffine oil. [The references to this are incomplete.]

Effect of radium and of α -rays on cond.; **687**, **834**.

Parafuchsine see Fuchsine.**Paraldehyde see Acetaldehyde.****Paratartaric acid see Tartaric acid.****Paraxanthine see 1,7-Dimethyl-2,6-dioxy-purine.****Pear. [The references to this are incomplete.]**

Concentration of H and OH ions in pear juice; **587**.

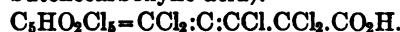
Pelargonic acid. $\text{C}_9\text{H}_{18}\text{O}_2 = \text{C}_8\text{H}_{17}\cdot\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $25^\circ = 1$.

$\Delta(1226) = 38.8$, $(2452) = 53.1$, $(\infty) = 351$; **601**.

Pelargonic acid ethyl ester. $\text{C}_{11}\text{H}_{22}\text{O}_2$.

In NH_3 , qual.; **606**.

Pentachloro-butenecarboxylic acid see Pentachloro-pentadiene-carboxylic acid.**1,1,3,4,4-Pentachloro-pentadiene-carboxylic acid. (Pentachloro-butenecarboxylic acid).**

$k_A \times 10^2 = 6$ [no data given]; **1028**, **2030**.

Pentacyanin see Pentahydroxy-anthraquinone.**1,2,4,5,8-Pentahydroxy-anthraquinone. (Alizarin cyanin. Pentacyanin). $\text{C}_{14}\text{H}_8\text{O}_7$.**

At 25°; 2Na.A, $\Delta(32)=81.1$, $(1024)=119.8$. - 3Na.A, $\Delta(32)=97.8$, $(1024)=120$. - 5Na.A, $\Delta(32)=107.6$, $(1024)=148.9$; **1275**.

Pentamethylene-carboxylic acid. (Cyclopentane-carboxylic acid).



$k_A \times 10^5$ [at 25°]=1.24.

$\Delta(20.9)=5.6$, $(667.2)=30.5$, $(\infty)=352$; **2026**.

Pentamethylene diamine. $\text{C}_5\text{H}_{14}\text{N}_2=\text{NH}_2.\text{C}_5\text{H}_{10}.\text{NH}_2$.

$k_B \times 10^4$ at 25°=7.3 aq.; about 16% too high; **271**.

Cond.; **1354**. At 25°, $\Delta(32)=28.2$, $(256)=67.8$, $(\infty)=197$; **271**.

B.2HCl at 25°, $\Delta(32)=105.0$, $(1024)=125.8$; **270**.

cis-Pentamethylene-1,2-dicarboxylic acid. $\text{C}_7\text{H}_{10}\text{O}_4$.

$k_A \times 10^4$ [at 25°]=1.58; m. p. 141°; **1410**.

trans-Pentamethylene-1,2-dicarboxylic acid. ($\alpha\beta$ -acid). $\text{C}_7\text{H}_{10}\text{O}_4$.

$k_A \times 10^4$ at 25°=1.2; m. p. 160°; **1410**, **1638**, **1859**.

Second $k_A \times 10^7=3.7$ (inversion); **1638**.

At 25°, $\mu(70.8)=31.3$, $(1132)=109.1$, $(\infty)=352$; **1859**.

cis-Pentamethylene-1,3-dicarboxylic acid. (*cis*-Cyclopentane-1,3-dicarboxylic acid). $\text{C}_7\text{H}_{10}\text{O}_4$.

$k_A \times 10^5=5.3$; increases on diln. $\mu(32)=14.1$, $(1024)=74.8$, $(\infty)=[352]$; m. p. 120°-121.5°; **1450**.

trans-Pentamethylene-1,3-dicarboxylic acid. (*trans*-Cyclopentane-1,3-dicarboxylic acid). $\text{C}_7\text{H}_{10}\text{O}_4$.

$k_A \times 10^5=5.0$; increases on diln. $\mu(32)=13.7$, $(1024)=73.7$, $(\infty)=[352]$; m. p. 87°-88.5°; **1450**.

norm.-Pentane. C_5H_{12} .

In MeNH_2 , no cond.; **637**.

Pentenic see **Pentenoic**.

$\alpha\beta$ -**Pentenoic acid** see **Propylideneacetic acid**.

$\beta\gamma$ -**Pentenoic acid** see **Ethylidenepropionic acid**.

$\gamma\delta$ -**Pentenoic acid** see **Allylacetic acid**.

Pentinic acid. $\text{C}_6\text{H}_8\text{O}_3$.

$k_A \times 10^5$ at 25°=8.7; m. p. 127°.

$\mu(32)=18.3$, $(1024)=91$, $(\infty)=356$.

Na.A at 25°, $\Delta(32)=67.7$, $(1024)=77.7$; **1823**, **1831**.

Pentyl alcohol see *iso*-**Amyl alcohol**.

Peppermint. [The references to this are incomplete.]

Cond. of soln. of leaves; **146**.

Pepsin. [The references to this are incomplete.]

H ion concentration; **1258a**. Cond. with albumin, showing digestion; **514a**.

Pepsinfibrinpeptone a. $\text{C}_{21}\text{H}_{34}\text{O}_9\text{N}_8$.

Cond. alone and with NaOH and HCl.

Na salt, $\Delta(32)=72.3$, $(1024)=101.9$; and $\Delta(32)=77.5$, $(1024)=106.6$; **1318**.

Pepsinglutinpeptone a. $C_{23}H_{39}O_{10}N_7$.

Cond. with NaOH and HCl.

Na salt, $\Delta(32)=75.8$, $(1024)=105.5$; **1318**.

Peptones see **Antipeptone**, **Pepsinfibrinpeptone**, **Pepsinglutinpeptone**.

Also see **145b**.

Perchloro-benzene see **Hexachloro-benzene**.

Petroleum ether. [The references to this are incomplete.]

Cond.; **1010**. Effect of α -rays on cond.; **687**. Effect of radium on cond.; **215**, **872**, **873**, **874**, **1491**.

Phenaceturic acid. (Phenylaceturic).

$C_{10}H_{11}O_3N = Ph.CH_2.CO.NH.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.03$.

$\mu(133)=52.9$, $(1064)=128.6$, $(\infty)=350$; **601**.

Phenanthrene. $C_{14}H_{10}$.

In $MeNH_2$, no cond.; **637**.

Phenanthrene-3-sulphonic acid. $C_{14}H_{10}O_3S = C_{14}H_9.SO_3H$.

At 18° , $\Delta(32)=313.2$, $(1024)=335.5$, $(\infty)=344$; m. p. $175^\circ-177^\circ$; **1574**.

Phenylytribenzoic acid see **1-Phenyl-2,3-naphthalenedicarboxylic acid**.

o-Phenetidine. (o-Aminophenol ethyl ether).

$C_8H_{11}ON = EtO.C_6H_4.NH_2$.

$k_B \times 10^{10}$ at $20^\circ = 4.64$ (colorim.); **1777**.

p-Phenetidine. (p-Aminophenol ethyl ether). $C_8H_{11}ON$.

$k_B \times 10^9$ at $15^\circ = 2.15$ (colorim.); **1777**.

Phenetole. (Phenol ethyl ether). $C_8H_{10}O = Ph.OEt$.

In NH_3 , qual.; **606**.

Phenocoll see **Glycocoll-p-phenetidine**.

Phenol. $C_6H_6O = Ph.OH$.

$\kappa \times 10^7$ at $43^\circ = 4.5$; m. p. 39.8° ; **1488**.

$k_A \times 10^{10}$ at $10^\circ = 0.56$ (hydrol.). At $15^\circ = 0.66$ (hydrol.); **1150a**.

At $18^\circ = 1.3$; **1865**, **1883**. At $21^\circ = 160$ (solub.); inaccurate; **1116**. At $24^\circ = 1.2$ (catal.); **1610a** and **1116**, **661**, **1043**. At $25^\circ = 0.97$ (hydrol.); **1150a**; $= 1.2$ (catal.); **733** and **1150**; $= 50$ (cond.); **733**, **70**. At $40^\circ = 1.51$ (hydrol.). At $50^\circ = 2.05$ (hydrol.); **1150a**.

Cond.; **70**, **168**, **733**, **789**, **1488**, **1508**, **1718**, **1747**, **1865**, **1883**. At 25° , $\Delta(32)=0.14$, $(256)=0.43$, $(\infty)=357$; **733**.

In HBr ; **29**; qual.; **1897**. In HCl and in H_2S , no cond.; **1897**.

In HCN , no cond.; **943**. In NH_3 , qual.; **606**. In Et alc.; **789**. In $MeNH_2$, good cond.; **637**.

Cond. with bases; **165**, **168**, **169**, **512**, **733**, **1150a**, **1508**, **1718**.

With salts; 756, 1488, 1599. With organic compounds; 1569, 1599, 1747. As solvent; (1488), 1569.

NH₄A; 165, 169, 733, 1150a.; (hydrol.); 302, 302a. - K.A; 165, 168. Na.A at 25°, $\Delta(32)=72.7$, (1024)=100.9; 733; 168, 1508, 1718.

Phenol-2,4-disulphonic acid. C₆H₄O₇S₂=OH.C₆H₃(SO₃H)₂.

Stronger than Phenolsulphonic acid (hydrol.); qual.; 1345.

Phenol ethyl ether see Phenetole.

Phenol methyl ether see Anisole.

Phenolphthalein. C₂₀H₁₄O₄.

k_A is probably of the order 10⁻¹¹ to 10⁻¹⁰. The following values are approximate. See 1916. Phenolphthalein is dibasic; 1916, 532. k_A × 10¹⁰ at 18° to 19°=8 (colorim.); 1562. At 23°=1.8 (colorim.); 1916. At 25°=0.75 (colorim.); 1230;=1.7 (colorim.); 822.

Cond. alone and with NaOH in Et alc.; 532.

In MeNH₂, fair cond.; 637.

o-Phenol sulphonic acid. C₆H₄O₄S=HO.C₆H₄.HSO₃.

Stronger than p- acid, (hydrol.); 1345.

Cu.2A at 25°, $\mu(32)=67.0$, (512)=81.4; 1090. - Na.A cond. alone and with NaOH; 1508, 1718.

m-Phenol sulphonic acid. C₆H₄O₄S.

Weaker than p- acid, (hydrol.); 1345.

p-Phenol sulphonic acid. C₆H₄O₄S.

Weaker than o- acid, (hydrol.); 1345.

Cu.2A at 25°, $\mu(32)=65.6$, (512)=81.9; 1090. - Na.A; 1508.

Phenosafrafranine. C₁₈H₁₆ON₄=C₁₈H₁₅N₄OH; or C₁₈H₁₄N₄(+H₂O).

Barbier, Sisley, 86, state that they have split this into two isomers. Hewitt, Newman, Winmill, Jour. Chem. Soc. 95, 577-584, (1909), say that the asymmetrical isomer (azophenosafrafranine) is really aminophenazine. Therefore the particular compound measured seems to be in doubt. The arrangement here follows the old order.

Phenosafrafranine.

At 25°, $\Delta(512)=176.6$; 770.

B.HCl (=C₁₈H₁₅N₄Cl) at 25°, $\Delta(128)=79.4$, (256)=81.7, (1024)=83.1; 882, 1266. $\Delta(256)=90.6$, (1024)=92.6; 770.

sym-Phenosafrafranine. (Indophenosafrafranine).

B.HCl; 86.

asym-Phenosafrafranine. (Azophenosafrafranine). **Aminophenazine?**

B.HCl; 86.

Phenoxy-acetic acid. (Glycollic acid phenyl ether. Phenylglycollic acid. Phenylacetic acid). C₈H₈O₃=PhO.CH₂.CO₂H.

k_A × 10⁴ at 25°=7.7; diminishes irregularly on diln.; 1370, 1670.

$\Delta(32) = 51.2$, $(1024) = 202.2$, $(\infty) = 353$; **1370**.

Na.A at 25° , $\Delta(32) = 64.7$, $(1024) = 74.8$; **1368a**.

α -Phenoxy-butyric acid. $C_{10}H_{12}O_3 = Et.CH(OPh).CO_2H$.

$k_A \times 10^4$ [at 25°] = 6.82; m. p. 82° – 83° ; **193**.

α -Phenoxy-iso-butyric acid. $C_{10}H_{12}O_3 = PhO.CMe_2.CO_2H$.

$k_A \times 10^4$ [at 25°] = 4.34; m. p. 97.5° – 98.2° ; **193**.

α -Phenoxy-propionic acid. (Lactic acid phenyl ether).

$C_9H_{10}O_3 = Me.CH(OPh).CO_2H$.

$k_A \times 10^4$ [at 25°] = 7.75; b. p. 265° – 266° ; **192**.

β -Phenoxy-propionic acid. $C_9H_{10}O_3 = PhO.CH_2.CH_2.CO_2H$.

$k_A \times 10^5$ [at 25°] = 5.4; m. p. 98° ; **192**.

α -Phenoxy-iso-valeric acid. $C_{11}H_{14}O_3 = Me_2CH.CH(OPh).CO_2H$.

$k_A \times 10^4$ [at 25°] = 4.66; m. p. 81.5° – 82.3° ; **193**.

Phenylacetamide see **Phenylacetic acid amide**.

Phenylacetamide-o-carboxylic acid see **Homo-o-phthalic acid 2-mono amide**.

Phenylacetic acid. (α -Toluic acid). $C_8H_8O_2 = PhCH_2.CO_2H$.

$k_A \times 10^5$, increases, then diminishes on diln. At $0^\circ = 5.4$. At $13.25^\circ = 5.4$; **1968a**. At $25^\circ = 5.4$; **1968**, **1968a**; = 5.5; **1371**; **1673**. At $35^\circ = 5.3$; **1968a**.

Cond.; **1495**. At 0° – 35° ; **1968**, **1968a**. At 25° , $\Delta(32) = 14.8$, $(1024) = 76$, $(\infty) = 356$; **1371**.

In NH_3 , qual.; **606**. In Et alc.; **1066**. In $MeNH_2$, good cond.; **637**. In pyridine; **754**.

Cond. with MoO_3 ; **1495**.

Ba.2A; **1066**. – Na.A at 25° , $\Delta(32) = 66.5$, $(1024) = 76.4$; **1368a**. – $MeNH_3.A$; **637**.

Phenylacetic acid amide. (Phenylacetamide).

$C_8H_9ON = PhCH_2.CONH_2$.

In NH_3 ; **610**.

α -iso-Phenylacetic acid. (α -Cycloheptatriene-carboxylic acid. Methylene-dihydro-benzoic acid). $C_8H_8O_2 = C_7H_7.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 3.67$; = 3.76 aq.; m. p. 71° .

$\Delta(75.7) = 19.5$, $(908.0) = 63.4$, $(\infty) = 377$; **1533**.

β -iso-Phenylacetic acid. (γ -Cycloheptatriene-carboxylic acid. β -p-Methylene-dihydro-benzoic acid). $C_8H_8O_2$.

$k_A \times 10^5$ at 25° is about 4; = 3.96; = 4.10 aq.; **1533**; = 3.79; m. p. 55° ; **1976**.

$\Delta(104.4) = 23.9$, $(417.8) = 46$, $(\infty) = 377$; **1533**. $\Delta(64) = 18.1$; **1976**.

δ -iso-Phenylacetic acid. (α -p-Methylene-dihydro-benzoic acid).

$C_8H_8O_2$.

$k_A \times 10^5$ at $25^\circ = 3.96$; m. p. 32° .

$\Delta(64) = 18.5$, $(1024) = 68.4$, $(\infty) = 377$; **1976**.

Phenylaceturic see Phenaceturic.

Phenylacetyl-amino-acetic acid. (Acetylanilino-acetic acid. Acetyl-phenyl glycine). $C_{10}H_{11}O_3N = PhN(MeCO).CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.6$; m. p. $194^\circ-195^\circ$.

$\Lambda(200) = 72.5$, $(1600) = 168$, $(\infty) = 356$; 1840.

β -Phenyl- γ -acetylbutyric acid.

$C_{12}H_{14}O_3 = MeCO.CH_2.CHPh.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 3.2$ aq.

$\Lambda(32) = 11.6$, $(1024) = 61.1$, $(\infty) = 372$; 1588.

Phenylacridinemethyl- see Methyl-phenyl-acridinium-

Phenylacrylic acid see Atropic acid and Cinnamic acid.

Phenylalanine see α -Anilinopropionic acid and Phenyl-aminopropionic acid.

Phenylamino-acetic acid. (Anilino-acetic acid. Phenyl glycine).

$C_8H_9O_2N = PhNH.CH_2.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 3.8$; m. p. $127^\circ-128^\circ$; 1840, 1370, 195.

$\Lambda(128) = 22.6$, $(1024) = 63.5$, $(\infty) = 356$; 1840.

inact.-Phenyl- α -aminopropionic acid. (*rac.*1²-Amino-hydrocinnamic acid. Phenylalanine). $C_9H_{11}O_2N = Ph.CH_2.CHNH_2.CO_2H$.

$k_A \times 10^9$ at $25^\circ = 2.5$ (hydrol.); = 950 (cond.).

$k_B \times 10^{12}$ at $25^\circ = 1.3$ (hydrol.); 947.

$\Lambda(128) = 3.9$, $(1024) = 10.8$, $(\infty) = 365$; 947. Also 145b.

Cond. with organic compounds; 145a, 145b.

Na.A at 25° , $\Lambda(32) = 61$, $(1024) = 72$; $M(32) = 62.9$. - B.HCl at 25° , $\Lambda(128) = 108$, $(1024) = 112$; $M(128) = 271$; 947.

Phenylazoxazolecaboxylic acid. $C_9H_5O_3N_2 = Ph.C_2ON_2.CO_2H$.

$k_A \times 10^2$ at $25^\circ = 3.37$. $\Lambda(64) = 260.5$, $(128) = 302.7$, $(\infty) = 350$; 768.

Phenylbenzyloxyamidine see Diphenyl-benzyl-hydroxy-amidine.

Phenylboric acid. $C_6H_7O_2B = Ph.B(OH)_2$.

At 25° , μ of 0.3792 g. in 25 cc. aq. = 0.13; m. p. 216° ; 1676a.

d-Phenylbromoacetic acid *iso*-butyl ester.

$C_{12}H_{16}O_2Br = Ph.CH.Br.CO_2.C_4H_9$.

In SO_2 , very small cond.; 1829; 1842.

Phenylcarbamic acid ethyl ester [?] (Ethylphenylcarbamate).

$C_9H_{11}O_2N$.

In NH_3 , qual.; 606.

Phenylcarbopyrrodiazolic acid see 1-Phenyl-5-pyrrodiazolone-3-carboxylic acid.

Phenyl-di-p-anisyl carbinol. $C_{21}H_{20}O_3$.

Comparative strength (colorim.); 74.

1-Phenyl-3,5-diethoxy urazole. $C_{12}H_{16}O_2N_2$.

Cond. in alcoholic HCl; m. p. 53° ; 18; qual.; 16.

Phenyldihydro-resorcinol. $C_{12}H_{12}O_2$. $k_A \times 10^5$ at $25^\circ = 1.2$ aq.; diminishes on diln. $\Delta(512) = 28$, $(1024) = 38.2$, $(\infty) = 374$; **1588**.**Phenyldihydro-resorcylic acid ethyl ester.** $C_{15}H_{16}O_4 = Ph.C_6H_5O(OH).CO_2Et$. $k_A \times 10^5$ at $25^\circ = 6.3$ aq.; diminishes on diln. $\Delta(270.2) = 45.3$, $(1081) = 83.4$, $(\infty) = [372]$; **1588**.**Phenyldihydro-resorcylic acid nitrile.** $C_{12}H_{11}O_2N = Ph.C_6H_5O(OH).CN$. $k_A \times 10^4$ at $25^\circ = 2.0$ aq.; diminishes on diln. $\Delta(339.7) = 85.1$, $(1359) = 145.5$, $(\infty) = 373$; **1588**.**Phenyldimethyl- see Dimethyl-phenyl-****Phenyldinitro-methane.** $C_7H_6O_4N_2 = Ph.CH(NO_2)_2$.In aq. too insol. to measure. Cond. in pyridine; **754**.**o-Phenylenediacetic acid.** $C_{10}H_{10}O_4 = C_6H_4(CH_2CO_2H)_2$. $k_A \times 10^4 = 1.1$; m. p. $148.5^\circ - 149^\circ$. $\mu(67.8) = 28.9$, $(1085.4) = 102.6$, $(\infty) = 350$; **81**.**o-Phenylene diamine.** (o-Diamino-benzene). $C_6H_8N_2 = C_6H_4(NH_2)_2$. $k_B \times 10^{10}$ at $25^\circ = 3.3$ (part.); **548**. Comparative strength (colorim.); **1777**.Second $k_B \times 10^{12} = 1.45$ (colorim.); **1777**.**m-Phenylene diamine.** $C_6H_8N_2$.

Weaker than o-Phenylene diamine (hydrol.).

Second $k_B \times 10^{12} = 1.35$ (colorim.); **1777**.**p-Phenylene diamine.** $C_6H_8N_2$.

Stronger than o-Phenylene diamine (hydrol.).

Second $k_B \times 10^{12} = 2.48$ (colorim.); **1777**.**o-Phenylene diamine 3-sulphonic acid.** (Diamino-benzene sulphonic acid). $C_6H_8O_2N_2S = (NH_2)_2C_6H_3(SO_3H)$. [$NH_2 = 1,2$; $HSO_3 = 3$.] $k_A \times 10^5$ at $25^\circ = 5$; increases on diln. $\Delta(43.7) = 14.8$, $(1398) = 81.3$, $(\infty) = 352$; **1372**.**Phenylene furazane.** (o-Benzoquinone dioxime anhydride). $C_8H_4ON_2$.Cond. with NaOH; **758**.**Phenylene Violet see Thionine.****Phenylethoxyacetic acid.** $C_{10}H_{12}O_3 = Ph.CH(OEt).CO_2H$. $k_A \times 10^4 = 5.3$; increases, then diminishes on diln. $\Delta(22.3) = 38.4$, $(712.9) = 163.2$, $(\infty) = 375$; **574**.**1-Phenyl-3-ethoxy-urazole.** $C_{10}H_{11}O_2N_3$. $k_A \times 10^8$ at $25^\circ = 3$; m. p. 152° . $\Delta(1024) = 2.1$, $(2048) = 3.5$, $(\infty) = 357.8$; **18**.In HBr, qual.; **16**. In alcoholic HCl; **18**; qual.; **16**.Na.A at 25° , $\Delta(32) = 59.1$, $(1024) = 69.7$; **18**.

1-Phenyl-3-ethylthio-urazole. $C_{10}H_{11}ON_2S$.

$k_A \times 10^7$ at $25^\circ = 5$; m. p. 137° – 138° .

$\Delta(2048) = 11$, $(4096) = 19.3$, $(\infty) = 355$; **18**.

Phenylglucosazone. $C_{12}H_{12}O_4N_4$.

In NH_3 , qual.; **606**.

Phenylglutaric acid. $C_{11}H_{12}O_4 = Ph.CH(CH_2CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 7.7$; m. p. 138° ; **1245**, **1813**.

$\Delta(45.6) = 21.5$, $(364.8) = 57$, $(\infty) = 373$; **1813**.

Phenyl glycine see **Phenylamino-acetic acid**.

Phenylglycine-o-carboxylic acid. (Anilinoacetic acid carboxylic acid).

$C_9H_9O_4N = CO_2H.C_6H_4.NH(CH_2.CO_2H)$.

$k_A \times 10^4$ at $25^\circ = 2.3$; diminishes on diln.

$\Delta(240.8) = 77.3$, $(\infty) = 374$; **1245**.

Phenylglycine-o-carboxylic acid eso mono methyl ester. (o-Carboxy-methyl-anilinoacetic acid).

$C_{10}H_{11}O_4N = CO_2Me.C_6H_4.NH(CH_2.CO_2H)$.

$k_A \times 10^4$ at $25^\circ = 1.4$; diminishes on diln.; m. p. 182° .

$\Delta(963.9) = 112.4$, $(\infty) = 373$; **1245**.

Phenylglycine-o-carboxylic acid exo mono methyl ester. (o-Carboxyanilinoacetic acid methyl ester).

$C_{10}H_{11}O_4N = CO_2H.C_6H_4.NH(CH_2.CO_2Me)$.

$k_A \times 10^5$ at $25^\circ = 2.8$; diminishes on diln.; m. p. 160° .

$\Delta(297.3) = 32.5$, $(\infty) = 373$; **1245**.

inact.-Phenylglycollic acid. (Amygdalinic acid. Mandelic acid).

$C_8H_8O_3 = Ph.CH(OH).CO_2H$.

$k_A \times 10^4$ at $0^\circ = 4.30$. At $12^\circ = 4.29$; **1968a**. At $25^\circ = 4.17$; **1371**, **1184**; $= 4.29$; **1968a**; $= 4.3$; m. p. 118° – 119° ; **1824**; $= 3.7$ (neutral.); **463**. At $35^\circ = 4.24$; **1968a**. Relative value; **1866**.

Cond. at 0° – 35° ; **1968a**; **1495**. At 25° , $\Delta(32) = 38.5$, $(1024) = 167.5$, $(\infty) = 353$; **1371**. $\Delta(32) = 38.6$, $(\infty) = 349$; **1968a**.

Cond. with boric acid; **1184**. With MoO_3 ; **1495**. With KOH and acetic acid; **463**.

$Na.A$ at 25° , $\Delta(32) = 64.6$, $(1024) = 75.0$; **1368a**; $\Delta(32) = 67.7$, $(1024) = 78.0$; **1275**. At 0° – 35° ; **1968a**.

Phenylglycollic acid methyl ester. $C_9H_{10}O_3 = Ph.CH(OH).CO_2Me$.

In HCl , good cond.; **1897**.

l-Phenylglycollic acid. $C_8H_8O_3$.

$k_A \times 10^4$ at $25^\circ = 4.3$; m. p. 130° ; **1824**.

Phenylglyoximecarboxylic acid. (Phenylamphiglyoxime carboxylic acid). $C_9H_8O_4N_2 = PhC(:NOH).C(:NOH)(CO_2H)$.

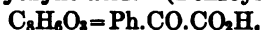
Exists only in soln. From cond. of the lactone in water, $k_A \times 10^8$ at 25° is at least 2; **768**. See the lactone, Phenylloximino-

syn-oxazolone.

Cond.; **701**.

Phenylglyoxylic acid see **Phthalonic acid**.

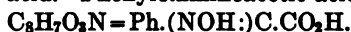
Phenylglyoxylic acid. (Benzoylformic acid).



$k_A \times 10^2$ at $25^\circ = 6$; increases on diln.

$\Lambda(29.1) = 252.6$, $(931.2) = 325.7$, $(\infty) = 354$; **70**.

Phenylglyoxylic acid anti-oxime. (Phenylanti-ketoxime carboxylic acid. Phenylloximinoacetic acid; *anti*-derivative).



$k_A \times 10^2$ at $25^\circ = 1.5$; diminishes on diln. from change to the isomeric *syn*-oxime.

$\mu(32) = 177$, $(1024) = 291.3$, $(\infty) = 354$; **768**.

Phenylglyoxylic acid syn-oxime. $\text{C}_8\text{H}_7\text{O}_3\text{N} = \text{PhC}(:\text{NOH}) \cdot \text{CO}_2\text{H}$.

$k_A \times 10^2$ at $25^\circ = 1.8$; **70**, **768**.

$\mu(32) = 75.4$, $(256) = 172.2$, $(\infty) = 354$; **768**.

$2\text{Na} \cdot \text{A}$ at 0° , $\mu(32) = 74.0$, $(256) = 101.1$; **635**.

Phenylhydrazine. $\text{C}_8\text{H}_8\text{N}_2 = \text{Ph} \cdot \text{HN} \cdot \text{NH}_2$.

α is very small; **1844**.

$k_B \times 10^9$ at $15^\circ = 1.62$ (colorim.); **1777**. At $40^\circ = 1.6$ (catal.); **19** and **1777**.

In HBr , fair cond. In H_2S , no cond.; **1897**. In HCN , small cond.; **943**. In benzene, no cond.; **1802**. In MeNH_2 , small cond.; **637**.

Cond. with allyl thiocarbimide; **1223**. With picric acid in benzene, no cond.; **1802**. As solvent; **1844**.

$\text{B} \cdot \text{HCl}$; hydrolysis at 40° ; **19**.

α -Phenylhydroxy-diazomalonic acid diethyl ester. $\text{C}_{13}\text{H}_{16}\text{O}_5\text{N}_2$.

Cond. in Et alc .

$\text{K} \cdot \text{A}$ in Et alc .; **418**.

Phenylhydroxy-pivalic acid. (Dimethyl-phenyl-ethylenelactic acid. Dimethyl-phenyl-hydroxy-propionic acid).



$k_A \times 10^5$ at $25^\circ = 4.5$; increases, then diminishes on diln.; m. p. 134° .

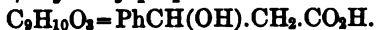
$\Lambda(33.1) = 13.1$, $(1058.4) = 67.9$, $(\infty) = 348$; **1704**.

β -Phenyl- α -hydroxy-propionic acid. $\text{C}_9\text{H}_{10}\text{O}_3 = \text{PhCH}_2 \cdot \text{CHOH} \cdot \text{CO}_2\text{H}$.

$k_A \times 10^4 = 1.9$.

$\Lambda(109) = 51$, $(436) = 92.4$, $(\infty) = 376$; **574**.

β -Phenyl- β -hydroxy-propionic acid.



$k_A \times 10^5 = 4$.

$\Lambda(109) = 23.9$, $(872) = 65.4$, $(\infty) = 376$; **574**.

1-Phenyl-5-hydroxy-1,2,3-triazole-4-carboxylic acid methyl ester.



$k_A \times 10^3$ at $25^\circ = 1.6$; diminishes on diln. At $50^\circ = 1.5$; diminishes on diln.; m. p. 74° . At 25° , $\Lambda(148.4) = 280.3$ (1187) = 346.3, $(\infty) = 371$; **447**.

Enolic and ketonic forms in pyridine; **754**.

Na.A at 25° , $\Lambda(32) = 63.3$, (1024) = 72.9; **447**.

Phenyliminodiacetic acid. $C_{10}H_{11}O_4N = PhN(CH_2CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 2.73$; diminishes on diln.; m. p. $150^\circ - 155^\circ$.

$\mu(210) = 184$, (840) = 262, $(\infty) = 352$; **1840**.

Phenylindone-acetic acid. (3-Phenyl-1-ketoindene-2-methylcarboxylic acid). $C_{17}H_{13}O_3$.

Comparative strength (colorim.); m. p. 167.5° ; **1665**.

Phenylindone-acetic acid methyl ester. $C_{18}H_{14}O_3$.

Comparative strength (colorim.); **1665**.

Phenylisoxazolecarboxylic acid. $C_{10}H_7O_3N$.

$k_A \times 10^3$ at $25^\circ = 5.5$ aq.

$\Lambda(186.6) = 218.5$, (1492.8) = 320, $(\infty) = 354$; **23**.

3-Phenylisoxazolone(5). (Phenyl-*syn*-oxazolone). $C_9H_7O_2N$.

$k_A \times 10^5$ at $25^\circ = 5.5$; diminishes on diln.

$\Lambda(512) = 54.1$, (1024) = 72.7, $(\infty) = 355$; **768**.

Phenylitaconic acid. $C_{11}H_{10}O_4 = Ph.CH:C(CO_2H).CH_2.CO_2H$.

$k_A \times 10^4$ [at 25°] = 1.37.

$\mu(128) = 46.4$, (1024) = 115.6, $(\infty) = 375$; **1684**.

Phenylketoximepropionic acid see β -Benzoylpropionic acid oxime.

Phenyllutidinedicarboxylic acid. (2,6-Dimethyl-4-phenylpyridine-3,5-dicarboxylic acid). $C_{15}H_{13}O_4N = (Me)_2(Ph)C_5N(CO_2H)_2$.

$k_A \times 10^4$ at $25^\circ = 1.2$.

$\mu(512) = 76.9$, (1024) = 101.4, $(\infty) = 350$; **1372**.

Phenyllutidinedicarboxylic acid mono ethyl ester.

$C_{17}H_{17}O_4N = C_{12}H_{11}N(CO_2H)(CO_2Et)$.

$k_A \times 10^5$ at $25^\circ = 5.3$; diminishes on diln. $\mu(128) = 27.6$, (1024) = 66, $(\infty) = 350$; **1372**.

1-Phenyl-methoxy-acetic acid. (1-Phenylglycollic acid methyl ether).

$C_9H_{10}O_3 = Ph.CH(OMe).CO_2H$.

$k_A \times 10^4$ at $25^\circ = 7.4$; m. p. $63^\circ - 64^\circ$; **574**, **1239**.

$\Lambda(32) = 53.9$, (1024) = 211.1, $(\infty) = 376$; **574**.

Phenylmethyl- see **Methylphenyl-**

1-Phenyl-3-methylthio-urazole. $C_9H_9ON_2S$.

$k_A \times 10^7$ at $25^\circ = 1.3$; m. p. $174^\circ - 175^\circ$. $\Lambda(1024) = 4$, (2048) = 5.4, $(\infty) = 355$.

Na.A at 25° , $\Lambda(64) = 63.6$, (1024) = 72.9; **18**.

1-Phenyl-2,3-naphthalenedicarboxylic acid. (3,4-Diphenyl-2,4-cyclobutadiene-1,2-dicarboxylic acid. Phenenyltribenzoic acid.

Triphenyl-trimesic acid). $C_{18}H_{12}O_4 = Ph.C_{10}H_6(CO_2H)_2$.

Na salt at 25° , $\mu(32) = 63.3$, (1024) = 84.3; **1213**.

Phenyl- β -naphthylamine trisulphonic acid. (α -Naphthylphenylamine trisulphonic acid). $C_{16}H_{13}O_6NS_3 = C_{16}H_{10}N(HSO_3)_3$.

At 25°, $\mu(768) = 329.7$, (1536) = 329.7; **492**.

Phenylnitroamine. (Benzene diazoic acid. Diazo benzene acid).

$C_6H_4O_2N_2 = Ph.NH(NO_2)$.

$k_A \times 10^5$ at 1° = 1.2. At 10° = 1.5. At 18° = 1.7; m. p. 46.7°; **513**.

At 25° = 2.3; **736**; = 1.3; **77**.

At 25°, $\Delta(128) = 19$, (1024) = 51.6, (∞) = 351; **736**.

In Et alc.; **513**.

Phenyl-iso-nitroamine see **Phenylnitrosohydroxylamine**.

Phenylnitromethane. (1¹-Nitrotoluene). $C_7H_7O_2N = Ph.CH_2.NO_2$.

No cond. in aq.; **775**.

iso-Phenylnitromethane. $C_7H_7O_2N = Ph.HC.(ONOH)$.

Na.A at 25°, $\Delta(32) = 75.8$; m. p. of acid is 84°, rapidly heated; **775**.

Phenylnitrosohydroxylamine. (Phenyl-iso-nitroamine).

$C_6H_4O_2N_2 = Ph.N(NO)OH$.

$k_A \times 10^6$ at 0° = 5; increases on diln. $\Delta(128) = 5.5$, (512) = 11.7, (∞) = 221.

Na.A at 0°, $\Delta(128) = 66.6$, (1024) = 70.0; **736**.

Phenyl-iso-ox- see **Phenylisox-**

Phenyl-syn-oxazolone see **Phenylisoxazolone**.

Phenyloximinoacetic acid see **Phenyglyoxylic acid oxime**.

Phenyloximino-syn-oxazolone. $C_9H_6O_3N_2$.

$k_A \times 10^4$ at 25° = 1.9; **768**; **701**. $\mu(512) = 93.7$, (1024) = 122.1, (∞) = 350; **768**.

In Et alc.; **701**.

K.A at 0°, $\mu(32) = 46.6$, (1024) = 51.2; **701**.

Phenylparaconic acid. $C_{11}H_{10}O_4$.

Cond.; m. p. 170°; **579**.

iso-Phenylparaconic acid. $C_{11}H_{10}O_4$.

Cond.; m. p. 170°; **579**.

Phenylphenanthrophenazonium hydroxide. $C_{26}H_{18}ON_2$.

At 0°, $\Delta(512) = 3.4$ from cond. of B.Cl + NaOH. Is a strong base, but changes almost at once to the pseudo base, which has no cond.

B.Cl (flavindulinium chloride) at 25°, $\Delta(64) = 86.3$, (512) = 92.5; **770**.

Phenylpropionic acid. $C_9H_8O_2 = Ph.C:C.CO_2H$.

$k_A \times 10^8$ at 25° = 5.9; diminishes, then increases on diln.

$\Delta(80) = 158.5$, (960) = 305.5, (∞) = 352; **1371**.

Na.A at 25°, $\Delta(32) = 64.6$, (1024) = 74.3; **1368a**; - **1213**.

Phenylpropionic acid see **Hydratropic acid**.

Phenylpropoxyacetic acid. $C_{11}H_{14}O_3 = Ph.CH(OPr).CO_2H$.

$k_A \times 10^4 = 4.9$; increases, then diminishes on diln.

$\Lambda(27.1) = 40.6$, $(867.5) = 170$, $(\infty) = 374$; **574**.

1-Phenyl pyrazole. $C_9H_8N_2$.

In aq., no cond.; **977**.

3-Phenylpyridinecarboxylic acid. (Bz-2). (o-Pyridinebenzoic acid).

$C_{12}H_9O_2N = CO_2H.C_6H_4.C_5H_4N$. [$CO_2H = 2$.]

$k_A \times 10^6$ at $25^\circ = 5$. $\Lambda(128) = 7.7$, $(1024) = 23.3$, $(\infty) = 350$; **1372**.

α -Phenylpyridine-dicarboxylic acid. (2-Phenylpyridine-Bz-2, Py-2-dicarboxylic acid). $C_{13}H_9O_4N = CO_2H.C_6H_4.C_5H_3N.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.4$. $\mu(128) = 40.2$, $(1024) = 110.3$, $(\infty) = 350$; **1372**.

2Na.A at 25° , $\mu(32) = 70.5$, $(1024) = 88.6$; **1369**.

β -Phenylpyridine-dicarboxylic acid. (3-Phenylpyridine-Bz-2, Py-2-dicarboxylic acid). $C_{13}H_9O_4N$.

$k_A \times 10^4$ at $25^\circ = 1.1$. $\mu(64) = 27.2$, $(1024) = 100.9$, $(\infty) = 350$; **1372**.

1-Phenyl-5-pyrroldiazolone-3-carboxylic acid. (Phenylcarbopyrroldiazolic acid). $C_9H_7O_3N_3$.

A strong acid [no data]; m. p. 183° – 184° .

Cond. increased by boric acid; **1186**.

Phenylrosinduline. $C_{28}H_{19}N_3$.

Very small cond.; is really a non electrolyte; **770**.

Phenylsuccinic acid. $C_{10}H_{10}O_4 = CO_2H.CHPh.CH_2.CO_2H$.

$k_A \times 10^4$ [at 25°] = 1.64; **1684**, **1936**.

$\mu(64.2) = 35.8$, $(1035) = 123.1$, $(\infty) = 374$; **1936**.

Phenylsuccinic acid α -mono methyl ester.

$C_{11}H_{12}O_4 = CO_2Me.CHPh.CH_2.CO_2H$.

$k_A \times 10^5$ [at 25°] = 4.9; diminishes on diln.; m. p. 102° .

$\mu(510.9) = 54.6$, $(1023) = 74$, $(\infty) = 374$; **1936**.

Phenylsuccinic acid β -mono methyl ester.

$C_{11}H_{12}O_4 = CO_2H.CHPh.CH_2.CO_2Me$.

$k_A \times 10^4$ [at 25°] = 1.1; diminishes on diln.; m. p. 92° ; **1684**, **1936**.

$\mu(256.6) = 57.4$, $(1030) = 102.6$, $(\infty) = 374$; **1936**.

Phenylsulphone-acetic acid. $C_8H_8O_4S = Ph.SO_2.CH_2.CO_2H$.

$k_A \times 10^8$ at $25^\circ = 4.22$ (hydrol.); m. p. 112.5° – 113° (cor.); **1467** and Lundén, Affinitätsmessungen.

α -Phenylsulphone-propionic acid. $C_9H_{10}O_4S = MeCH(SO_2Ph).CO_2H$.

$k_A \times 10^8$ at $25^\circ = 3.14$ (hydrol.); **1467** and Lundén, Affinitätsmessungen.

Phenyltetric acid. $C_{11}H_{10}O_8$.

$k_A \times 10^4$ at $25^\circ = 1.94$. $\mu(270) = 72$, $(1080) = 128$, $(\infty) = 353$.

Na.A at 25° , $\mu(32) = 65.3$, $(1024) = 74.0$; **1831**.

Phenyl thiocarbimide. (Phenyl mustard oil. Phenyl-*iso*-sulphocyanate). $C_7H_5NS=CSNPh$.

$\alpha \times 10^7$ at $25^\circ = 1.8$; b. p. 222° @ 754 mm.; 1843; - 1223.

In NH_3 , qual.; 606.

Cond. with I; 1223.

1-Phenyl-3-thio-urazole. $C_8H_7ON_2S$.

$k_A \times 10^3$ at $25^\circ = 1.7$; increases on diln.; m. p. 192° - 193° .

$\Lambda(64) = 226.4$, $(256) = 292.8$, $(\infty) = 355$.

Ba.2A. - Na.A at 25° , $\Lambda(32) = 43.0$, $(1024) = 65.0$; 18.

Phenyl-p-tolylbenzenylamidine. (Benzenylphenylamino-p-tolylimidine. 1,2-Diphenyl-3-p-tolylamidine).

$C_{20}H_{18}N_2 = PhC(NHPh):N.C_6H_4Me$.

B.HCl, $\Lambda(128) = 84.1$, $(1024) = 92.2$; m. p. 243° - 244° ; 1093. [The base has m. p. 135° - 136° .]

Phenyltriethyl- see Triethyl-phenyl-

Phenyltrimethyl- see Trimethyl-phenyl-

β -Phenyl- γ -trimethylacetyl-butyric acid.

$C_{16}H_{30}O_3 = Me_3C.CO.CH_2.CHPH.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 2.6$ aq.

$\Lambda(641) = 45.3$, $(1282) = 60.7$, $(\infty) = 372$; 1588.

1-Phenyl-urazole. $C_8H_7O_2N_2$.

$k_A \times 10^5$ at $25^\circ = 1.1$; m. p. 265° - 267° . $\Lambda(512) = 26.4$, $(1024) = 36.3$, $(\infty) = 356.2$.

Na.A at 25° , $\Lambda(32) = 60.0$, $(1024) = 81.6$; 18.

Phloretic acid. $C_9H_{10}O_3 = MeCH(C_6H_4.OH).CO_2H$.

$k_A \times 10^5$ at $25^\circ = 2.03$. [Bougault, Compt. Rend. 131, 43, says that this is the same acid as p-Hydrocoumaric acid, $k \times 10^5 = 1.7$.]

$\Lambda(64) = 12.5$, $(1024) = 46.6$, $(\infty) = 376$; 1371.

Phloridzin. $C_{21}H_{24}O_{10}$.

In NH_3 , qual.; 606.

Phloroglucinol. (1,3,5-Trihydroxy-benzene). $C_6H_6O_3 = C_6H_3(OH)_3$.

$k_A = ?$. At 25° , $k \times 10^8$ for v (33.4) = 8, for v (133.6) = 18.

$\mu(33.4) = 0.6$, $(133.6) = 1.7$, $(\infty) = 355$; 70.

Cond. alone and with NaOH; 1508, 1718.

Phloroglucinol aldehyde. (2,4,6-Trihydroxy-benzaldehyde).

$C_7H_6O_4 = CHO.C_6H_3(OH)_3$. [CHO = 1.]

$k_A \times 10^5$ at $25^\circ = 4.3$.

$\mu(315.4) = 39$, $(1261.6) = 72.8$, $(\infty) = 355$; 643.

Phloroglucinol carboxylic acid. (2,4,6-Trihydroxy-benzoic acid).

$C_7H_6O_5 = CO_2H.C_6H_3(OH)_3$. [CO₂H = 1.]

$k_A \times 10^2$ at $25^\circ = 2$; diminishes on diln.

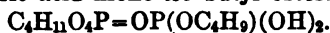
$\mu(32) = 194$, $(1024) = 329$, $(\infty) = 356$; 1371.

Cond. alone and with NaOH in Et alc.; 1508, 1718.

Phorone. $C_9H_{14}O = Me_2C:CH.CO.CH:CM_{e_2}$.

In SO_2 ; 1842.

Phosphoric acid mono *iso*-butyl ester. (*iso*-Butyl phosphoric acid).



At 25° , $\mu(32) = 237$, $(512) = 366$; 354.

Phosphoric acid mono erythran mono ester. (Erythran phosphoric acid). $C_4H_8O_5P = OP(O.C_4H_7O_2)(OH)_2$.

At 25° , $\mu(32) = 283$, $(512) = 370$; 354.

Phosphoric acid mono erythran di ester. (Dierythran phosphoric acid). $C_4H_7O_5P = OP(O_2.C_4H_6O)(OH)$.

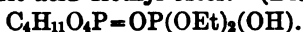
Mixed with 65% of the mono ester, at 25° , $\mu(8) = 232$; 354.

Phosphoric acid mono ethyl ester. (Ethyl phosphoric acid).



At 25° , $\mu(32) = 241$, $(512) = 369$; 354.

Phosphoric acid diethyl ester. (Diethyl phosphoric acid).



$k_A \times 10^2$ at $25^\circ = 9.8$ (cond.); = 10 (inversion).

At 25° , $\mu(32) = 300.8$, $(1024) = 373$, $(\infty) = 379$.

Na.A at 25° , $\mu(32) = 68.4$, $(1024) = 80.4$; 859.

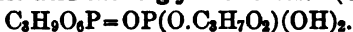
Phosphoric acid tetrafluoro-diethyl ester. (Tetrafluoro-diethyl phosphoric acid). $C_4H_7O_4PF_4 = OP(OC_2H_5F_2)_2(OH)$.

$k_A \times 10$ at $25^\circ = 6.2$ (inversion).

At 25° , $\mu(32) = 346.5$, $(1024) = 379.2$, $(\infty) = 382$.

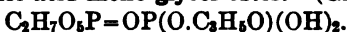
Na.A at 25° , $\mu(32) = 70.7$, $(1024) = 83.5$; 859.

Phosphoric acid mono glycerol ester. (Glycerol phosphoric acid).



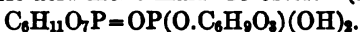
At 25° , $\mu(32) = 263$, $(512) = 354$; 354.

Phosphoric acid mono glycol ester. (Glycol phosphoric acid).



At 25° , $\mu(32) = 265$, $(512) = 358$; 354.

Phosphoric acid mono mannide ester. (Mannide phosphoric acid).



At 25° , $\mu(32) = 274$, $(512) = 364$; 354.

Phosphorus see the preceding compounds; also *iso*-Amyltriphenyl phosphonium chloride, Ethoxy phosphorus chloride, Ethylenehexaphenyl phosphonium chloride, Ethyl-, Methyl- and Propyl-triphenyl phosphonium chloride, Tetraethyl-, Tetraethyl- and Tetramethyl-phosphonium hydroxide, Triethyl phosphine, Triethyl phosphine oxide, Triphenyl-benzyl phosphonium chloride, Triphenyl phosphine; and complex salts; 815, 1522.

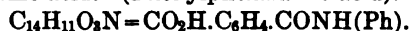
***o*-Phthalaldehydic acid.** $C_8H_6O_3 = CHO.C_6H_4.CO_2H$.

$k_A \times 10^6$ [at 25°] = 3.6; 1912.

Phthalamic acid see *o*-Phthalic acid mono amide.

Phthalaminoacetic acid see **Phthalylamino-acetic acid**.

Phthalanilic acid. (Phenylphthalamic acid).



Cond. too irregular to get an approximate value of k ; [no data given.]; **1372**.

Na.A at 25° , $\Lambda(32)=60.7$, $(1024)=71.0$; **1368a**.

o-Phthalic acid. (Phthalic acid). $\text{C}_8\text{H}_6\text{O}_4=\text{CO}_2\text{H}.\text{C}_6\text{H}_4.\text{CO}_2\text{H}$.

$k_A \times 10^3$ at $0^\circ=1.34$; **1968a**; $=1.18$ aq.; [with a different value of $\mu(\infty)$]; **1018**. At $8.23^\circ=1.28$; **1968a**. At $17^\circ=1.25$ aq.; **164**. At $18^\circ=1.3$ (colorim.); **1563**, **1781**. At $25^\circ=1.21$; **1372**, **1500b**, **1968**; $=1.26$ [with a different value of $\mu(\infty)$]; **1968a**; the value in **860** is of doubtful accuracy. At $35^\circ=1.22$; **1968a**.

Second $k_A \times 10^6=3.1$ (part.) $=3.9$ (cond.); **370**; $=1.7$ (inversion); **1638**; $=2.2$ (inversion); **1335**.

Cond.; **164**, **171**. At $0^\circ-35^\circ$; **1968**, **1968a**. At $35^\circ-65^\circ$; **388a**. At 25° , $\mu(64)=85.9$, $(1024)=232.1$, $(\infty)=354$; **1372**. $\mu(64)=85.9$, $(\infty)=349$; **1968a**.

In HBr, no cond.; **30**. In HCl; **30**. In NH_3 , qual.; **606**. In N_2O_4 , no cond.; **602**. In Et alc.; **647**.

Cond. with KOH; **171**.

K.A; **164**. - 2K.A; **164**, **171**. - Na.A at 25° , $\mu(32)=70.6$, $(1024)=100$; **370**. - 2Na.A at 25° , $\mu(32)=81.5$, $(1024)=98$; **370**. $\Lambda(32)=76.7$, $(1024)=93.8$; **270**.

o-Phthalic acid mono amide. (Phthalamic acid).



$k_A \times 10^4$ at $25^\circ=1.60$.

$\mu(32)=24.2$, $(1024)=116.6$, $(\infty)=353$; **1372**.

o-Phthalic acid anhydride. (Phthalic anhydride). $\text{C}_8\text{H}_4\text{O}_3$.

Cond. of soln. showing change to acid; **1500b**.

In H_2SO_4 ; **223**, **750**.

o-Phthalic acid mono ethyl ester. $\text{C}_{10}\text{H}_{10}\text{O}_4=\text{CO}_2\text{H}.\text{C}_6\text{H}_4.\text{CO}_2\text{Et}$.

$k_A \times 10^4$ at $25^\circ=5.5$.

$\mu(120)=79.9$, $(960)=179$, $(\infty)=352$; **1859**.

o-Phthalic acid mono methyl ester. $\text{C}_9\text{H}_8\text{O}_4=\text{CO}_2\text{H}.\text{C}_6\text{H}_4.\text{CO}_2\text{Me}$.

$k_A \times 10^4$ at $25^\circ=6.56$; m. p. 82.5° .

$\mu(102)=79.9$, $(816)=180.2$, $(\infty)=352$; **1859**.

m-Phthalic acid. (*iso*-Phthalic acid). $\text{C}_8\text{H}_6\text{O}_4=\text{CO}_2\text{H}.\text{C}_6\text{H}_4.\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $0^\circ=2$ aq.; **1018**. At $18^\circ=3.3$ (colorim.); **1563**. At $25^\circ=2.9$; aq. used for soln. was not pure; **1372**.

Second $k_A \times 10^5=2.7$ (part.); $=2.4$ (cond.); **370**; $=1.0$ (inversion); **1335**.

At 25° , $\mu(512)=112$, $(1024)=147$, $(\infty)=354$; **1372**.

In HBr and HCl, no cond.; **30**.

Na.A at 25°, $\mu(256)=91.3$, (1024)=115. - 2Na.A at 25°, $\mu(256)=92$, (1024)=98; **370**.

p-Phthalic acid. (Terephthalic acid). $C_8H_6O_4=CO_2H.C_6H_4.CO_2H$.
 $k_A \times 10^4$ at 25°=1.5 (calculated); **1372**, **1911**.

In NH_3 , qual.; **606**.

Phthalimide. $C_8H_5O_2N=C_6H_4(CO)_2NH$.

$k_A \times 10^9$ at 25° is about 5 (colorim). At 15°–40°=26 to 40 (cond.); the values are too high; m. p. 229.0°–229.3°; **1143**. At 25°=100; **1996**.

At 25°, $\Lambda(256)=1.99$; **1996**.

In NH_3 ; **610**; qual.; **606**.

Hg salt, e. m. f.; **963**. - K.A, decomposition to phthalamic acid; qual.; **781**. In HCN, small cond.; **943**. - Na.A, e. m. f.; **149**.

Phthalonic acid. (α -Phenylglyoxyl-o-carboxylic acid.)

$C_9H_6O_5=CO_2H.C_6H_4.CO.CO_2H$.

$k_A \times 10^2=2$; diminishes on diln.

$\mu(128)=293.6$, (1024)=348.3, (∞)=377; **1684**.

Phthalonic acid mono methyl ester. $C_{10}H_8O_5=CO_2H.C_6H_4.CO.CO_2Me$.

$k_A \times 10^4$ is about 1.5; saponifies easily in soln.

$\mu(256)=66.1$, (1024)=113.4, (∞)=375.7; **1684**.

Phthaluric acid. $C_9H_6O_4N_2=CO_2H.C_6H_4.CO.NH(CO.NH_2)$.

$k_A \times 10^4$ at 25°=2.9.

$\mu(64)=44.3$, (1024)=145, (∞)=350; **1372**.

Na.A at 25°, $\mu(32)=61.1$, (1024)=71.3; **1368a**.

o-Phthalylamino-acetic acid. (Phthalaminoacetic acid. o-Phthalyl glycine). $C_{10}H_7O_4N=C_6H_4(CO)_2N.CH_2.CO_2H$.

$k_A \times 10^3$ at 25°=1.

$\mu(64)=27.6$, (1024)=220, (∞)=351; **1370**.

Phthalyl glycine see **Phthalylamino-acetic acid**.

Phytolacca dioica. (Tree poke. Umbra tree). [The references to this are not complete.]

Cond. of stem and leaves; **1326**.

α -Picoline. (2-Methyl pyridine). $C_6H_7N=Me.C_5H_4N$.

$\kappa \times 10^7$ at 25°=5.3; **1569**.

$k_B \times 10^8$ at 15° is about 5 (colorim.); **1777**. At 25°=3.2 (hydrol.); b. p. 128.8° (in vapor); **402**;=0.46 (hydrol.); **1354**;=4.5? (cond.); **664**.

At 25°, $\Lambda(22.6)=0.18$, (361.6)=0.84, (∞)=206; **664**.

In SO_2 ; **1842**, **1855**. In NH_3 , qual.; **606**.

Cond. with Cu oleate; and as solvent; **1569**.

B.HCl at 25°, $\Lambda(64)=98.4$, (128)=101.9; **270**. - B.Picrate at 25°, $\Lambda(128)=58.4$; $M(128)=60.7$; **402**. - B.EtCl. - B.MeCl; **270**.

β -Picoline. (3-Methyl pyridine). C_6H_7N .

$k_B \times 10^8$ at $25^\circ = 1.1$ (hydrol.); b. p. 143.4° (in vapor).

B. Picrate at 25° , $\Delta(128) = 59.9$, $(512) = 64.9$; $M(128) = 63.6$; **402**.

γ -Picoline. (4-Methyl pyridine). C_6H_7N .

$k_B \times 10^8$ at $25^\circ = 1.1$ (hydrol.); somewhat too high; b. p. 143.1° (in vapor).

B. Picrate at 25° , $\Delta(128) = 58.0$, $(512) = 62.7$; $M(128) = 62.4$; **402**.

Picolinic acid see **Pyridine-2-carboxylic acid**.

Picramic acid see **2-Amino-4,6-dinitro-phenol**.

Picramide see **Trinitro-aniline**.

Picric acid see **Trinitro-phenol**.

Picrotoxin. [A mixture of compounds.]

In NH_3 , qual.; **606**.

Pilocarpine. $C_{11}H_{16}O_2N_2$.

k_B at 15° is of the order 10^{-7} (hydrol.); **1776**, **1779**.

Second $k_B \times 10^{11} = 4.2$ (colorim.); **1776**.

norm.-Pimelic acid. $C_7H_{12}O_4 = CO_2H.(CH_2)_5.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 3.4$. The values found, fall in three groups, differing slightly. The origin of the acid seems to affect the value. $k = 3.41$; **1178**, **1412**, **1838**, **1859**; $= 3.48$; m. p. 106° ; **1217**, **1219**, **1838**, **2018**; $= 3.23$; m. p. 103° ; **197**, **1638**, **1810**, **1838**; $= 3.57$, probably impure; [no regular decrease in k]; **1371**.

Second $k_A \times 10^6 = 4.4$ (part.); **370**; $= 2.6$ (inversion); **1638**.

At 25° , $\mu(32) = 11.5$, $(1024) = 61.1$, $(\infty) = 351$; **1838**.

Cond. with organic acids; **1638**.

2Na.A at 25° , $\Delta(32) = 73.9$, $(1024) = 88.9$; **270**.

Pimelic acid anhydride. $C_7H_{10}O_3$.

Cond. of soln. showing change to acid. M. p. 55° ; **1810**.

iso-Pimelic acid. (*asym.*-Methylethylsuccinic acid).

$C_7H_{12}O_4 = CO_2H.CH_2.CMeEt.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 9.5$; $= 9.0$; m. p. $105^\circ - 106^\circ$; **197**, **1838**; $= 9.8$; m. p. 104° ; **62**, **1838**. $\mu(32) = 18.9$, $(1024) = 96.3$, $(\infty) = 351$; **1838**.

γ -Pimelic acid. (β -Methyladipic acid. β -Pimelic acid).

$C_7H_{12}O_4 = CO_2H.(CH_2)_2.CHMe.CH_2.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 4.0$; $= 3.97$; m. p. $88.5^\circ - 89^\circ$; **1212**; $= 4.2$; m. p. $86^\circ - 87.5^\circ$; **1838**. At 25° , $\mu(32) = 12.3$, $(1024) = 63.9$, $(\infty) = 351$; **1212**.

2Na.A at 25° , $\Delta(32) = 76.5$, $(1024) = 94.6$; **1838**.

Pinacone. $C_8H_{14}O_2$.

In NH_3 , qual.; **606**.

Piperazine see **Diethylene diamine**.

Piperidic acid see **γ -Aminobutyric acid**.

Piperidine. (Hexahydro-pyridine). $C_6H_{11}N=C_6H_{10}.NH$.

$\kappa \times 10^7$ at 25° is less than 1.8; **1106, 1107.**

$k_B \times 10^3$ at $0^\circ=0.89$. At $5.5^\circ=0.95$. At $10^\circ=1.07$. At $15^\circ=1.11$.

At $20^\circ=1.15$; **776**. At $25^\circ=1.20$; **776**; $=1.58$ aq.; about 16% too high; **271**. See also; **1283**. At $30^\circ=1.24$. At $35^\circ=1.25$.

At $40^\circ=1.24$. At $45^\circ=1.23$. At $50^\circ=1.21$; **776**.

Cond.; **425, 426, 593, 776, 979**. At 25° , $\Delta(32)=41.3$, $(256)=93.2$, $(\infty)=203$; **271**.

In HBr, small cond.; **1897**. In H_2S ; **1646**; qual.; **1897**. In NH_3 , qual.; **606**.

Cond. with bases; **425, 426**. With salts; **1106, 1107**. With organic compounds; **593, 979, 1106, 1107**. As solvent; **754**.

B.HCl at 25° , $\Delta(32)=92.0$, $(1024)=103.3$; **270**. In NH_4OH ; **650**.

Piperidinoacetic acid. $C_7H_{15}O_3N=C_6H_{10}.N.CH_2.CO_2H + H_2O$.

$k_A \times 10^{11}$ at $25^\circ=8.2$ (hydrol.).

$k_B \times 10^{12}$ at $25^\circ=1.1$ (hydrol.).

Cond. with glyccoll and acetates.

Na.A at 25° , $M(64)=84.4$, $(256)=102.2$; $\Delta(64)=70$. - B.HCl at 25° , $M(64)=271.6$, $(256)=350$; $\Delta(64)=102$; **1066**.

Piperonal. (Heliotropine).

$C_8H_8O_3=CHO.C_6H_5.O_2CH_3$. [CHO=1; O=3, 4.]

In NH_3 , qual.; **606**.

Piperylenedicarboxylic acid. $C_7H_8O_4=C_6H_6(CO_2H)_2$.

$k_A \times 10^4=1.16$; m. p. 169° .

$\mu(32)=20.8$, $(1024)=103.4$, $(\infty)=354$; **1974**.

Piscidic acid. $C_{11}H_{18}O_7$; probably $C_9H_8O(OH)_2(CO_2H)_2$.

2Na.A at 25° , $\Delta(32)=68.9$, $(1024)=89.0$; m. p. $182^\circ-185^\circ$; **617**.

Pivalic acid see Trimethyl-acetic acid.

Plants. [The references to this subject are incomplete.]

See **146, 253, 587, 792, 1326**.

Platini thiocyanic acid. $C_6H_2N_6S_6Pt=H_2Pt(CNS)_6$.

2K.A at 25° , $\Delta(32)=100.8$, $(1024)=118.0$; **1832**.

Platino cyanic acid. $C_4H_2N_4Pt=H_2Pt(CN)_4$.

At 25° , $\mu(32)=705.8$, $(1024)=760.0$; **1837**.

Mg.A; **1836**. - 2K.A in HCN, good cond.; **943**. - Na.A.- 2Na.A at 25° , $\Delta(32)=103.4$, $(1024)=122.0$; **1837**.

Platino thiocyanic acid. $C_4H_2N_4S_4Pt=H_2Pt(CNS)_4$.

2K.A at 25° , $\Delta(32)=96.8$, $(1024)=114.9$; **150**.

Platinum.

"Double" and complex salts; **550, 815, 886, 1522, 1762, 1948**; also see the preceding compounds, and **1466**.

Pomegranate see Granatum.

Ponceau see Crystal Ponceau.

Prehnitic acid see **2,3,4,5-Tetramethyl-benzoic acid**.

Prehnitylic acid see **2,3,4-Trimethyl-benzoic acid**.

Proline see **Pyrrolidine- α -carboxylic acid**.

Propargylenetetracarboxylic acid. (Trimethylene-tetracarboxylic acid). $C_7H_4O_8 = C_3H_2(CO_2H)_4$.

4Na.A at 25°, $\mu(32)=81.9$, (1024)=123.7; **1369**.

Propenylsuccinic acid. $C_7H_{10}O_4 = CO_2H.CH_2.CH(CH:CHMe)CO_2H$.

$k_A \times 10^5$ at 25°=5.96; diminishes on diln. $\Delta(32)=16.0$, (1024)=74.6, (∞)=376; m. p. 135°; **571a**.

Propenyltricarboxylic acid. $C_6H_8O_6 = CO_2H.MeCH.CH(CO_2H)_2$.

$k_A \times 10^3$ at 25°=3.05; m. p. 146°. [A typographical error in the original makes $k=30$.] $\mu(32)=94.7$, (1024)=290, (∞)=353; **1839**.

Propionamide see **Propionic acid amide**.

Propionhydroxamic acid. $C_3H_7O_2N = Et.CH.N.OH$.

$k_A \times 10^8$ [at 25°]=3; increases on diln.

$\mu(16)=0.23$, (32)=0.40, (∞)=[380]; **1353a**.

Propionic acid. $C_3H_6O_2 = Et.CO_2H$.

$\kappa \times 10^8$ at 25°=7; **1380**.

$k_A \times 10^5$ at 0°=1.33. At 6.9°=1.36; **1968a**. At 10°=1.38; **875**.

At 18°=1.4; **93**, **94**; (colorim.); **1563**. At 20°=1.42; **875**.

At 25°=1.35=1.34; **601**, **1370**;=1.38; **1968**, **1968a**;=1.45;

461; (colorim.); **496**, **1643**, **1781**. At 30°=1.43; **875**. At

35°=1.36; **1968a**. At 40°=1.41; **875**. At 55°=60; (action

of diastase on starch); **2002**.

Cond.; **93**, **94**, **542**, **1094**, **1495**. At -1° to +10°; **347**. At

0°-35°; **911**, **1968**, **1968a**. At 10°-50°; **875**. At 18° and

52°; **43**. At 25°, $\Delta(32)=7.4$, (1024)=38.7, (∞)=356; **1370**.

$\Delta(32)=7.4$, (1024)=38.9, (∞)=354; **1968a**.

In HBr, good cond.; **30**, **1897**. In HCl; **30**; qual.; **1897**. In H₂S, no cond.; **1897**. In H₂SO₄; **223**. In NH₃, qual.; **606**.

Cond. with inorg. compounds; **1495**, **1994**. With organic compounds; **93**, **94**, **1011**, **1618a**, **1821**, **1994**. Under pressure of 1-260 atmospheres; **542**.

Cu.2A; **1618a**. - Gl salt; **1711**. - Li.A; **1367**. - Mg.2A; **1836**.

- Hg.2A; **1094**. - K.A; **94**, **1367**. - Ag.A; **656**, **1537**. - Na.A;

93, **94**, **1367**. At 25°, $\Delta(32)=70.8$, (1024)=81.0; **1368a**.

At 0°-35°; **1968a**. At 10°-52°; **875**. At 18° and 52°; **43**.

At 25°-60°; **1537**. In NH₃, qual.; **606**. With organic com-

pounds; **94**, **1994**. Under pressure of 1-260 atmospheres;

542. - UO₂.2A; **449**.

Propionic acid amide. (Propionamide). $C_3H_7ON = Et.CONH_2$.

In NH₃, qual.; **606**.

- Cond. with HCl; **410**. With NaOH; **412**. With HgCl₂; **1097**.
 Hg salt, e. m. f.; **963**.
- Propionic acid amyl ester.** $C_8H_{16}O_2 = Et.CO_2C_5H_{11}$.
 In NH₃, qual.; **606**.
 Effect of temperature on cond.; **106**.
- Propionic acid ethyl ester.** $C_5H_{10}O_2 = Et.CO_2Et$.
 In HBr; **1846**.
 Effect of temperature on cond.; **106**.
- Propionic acid methyl ester.** $C_4H_8O_2$.
 In HBr, fair cond. In H₂S, no cond.; **1897**. In NH₃, qual.; **606**.
 Effect of temperature on cond.; **106**.
- Propionic acid propyl ester.** $C_6H_{12}O_2$.
 In NH₃, qual.; **606**.
 Effect of temperature on cond.; **106**.
- Propionic aldehyde.** (Propionaldehyde). $C_3H_6O = Et.CHO$.
 $\alpha \times 10^7$ at 0° = 6.98. At 25° = 9.5; b. p. 48°–49°; **1843, 1844**.
 As solvent; **1844**.
- Propionitrile.** (Ethyl cyanide). $C_3H_5N = Et.CN$.
 $\alpha \times 10^6$ at –25° = 0.06; **1853a**. At +25° is less than 0.001; **1843**;
 = 0.085; **1844, 1847**; = 1.0; **1853a; 482**. At 51° = 1.6. At
 61° = 1.8. At 70° = 2.2. At 81° = 2.9; **1853a**.
 $k_B \times 10^{15}$ at 25° = 1.8 (catal.); **1864** and **1150**. At 40° = 28 (catal.);
1995 and **1150**. At 60° = 95 (inversion); **1880** and **1150**.
 In NH₃, qual.; **606**.
 Cond. as solvent; **474, 1844, 1847, 1848, 1849, 1853a**.
 B.HCl at 25°, $\mu(50) = 373.4$. – 2B.H₂SO₄; **1864**.
- Propionylcyano-** see **Cyanopropionyl-**
- α -Propyladipic acid.** $C_9H_{16}O_4 = CO_2H.(CH_2)_3.CHPr.CO_2H$.
 $k_A \times 10^5$ at 24.4° = 4.2; m. p. 55°–59°.
 $\mu(38.5) = 13.3$, (601.2) = 52.5, (∞) = 350; **1240**.
- Propyl alcohol.** $C_3H_8O = Pr.OH$.
 $\alpha \times 10^8$ at 18° = 4.5; **478**. At 25° = 8; **912, 913, 1589**; = 74; **1569**.
 In HBr; **29**. In NH₃, qual.; **606**.
 Cond. with Cu oleate; **1569**. As solvent; **334, 844, 471, 488**,
 (912), **1569, 1589, 1625, 1724**.
 Na.A; **344, 1724**.
- iso-Propyl alcohol.** $C_3H_8O = Me_2.CH.OH$.
 $\alpha \times 10^6$ at 25° = 3.3; **1569**.
 In MeNH₂, no cond.; **637**.
 Cond. with organic compounds; **45, 1569**. As solvent; **334**,
1569.
- Propylallyl-** see **Allylpropyl-**
- norm.-Propyl amine.** $C_3H_7N = Pr.NH_2$.
 $k_B \times 10^4$ at 25° = 4.7 aq.; about 16% too high; **271**.

Cond.; **1363**. At 25°, $\Lambda(32)=23.9$, $(256)=59.6$, $(\infty)=207$; **271**.
 B.HCl at 25°, $\Lambda(32)=96.2$, $(1024)=107.5$; **270**. - Complex salt
 with succinimide; **1755**.

iso-Propyl amine. $C_3H_7N=Me_2CH.NH_2$.

$k_B \times 10^4$ at 25°=5.3 aq.; about 16% too high. At 25°, $\Lambda(32)$
 =25.4, $(256)=62.3$, $(\infty)=207$; **271**.

B.HCl at 25°, $\Lambda(32)=96.1$, $(1024)=107.3$; **270**.

iso-Propylbenzoic acid see **Cuminic acid**.

Propyl bromide. C_3H_7Br .

$\kappa \times 10^8$ at 25° is less than 2; b. p. 69°-71° @ 740.1 mm.

Cond. with $AgNO_3$ and organic compounds; **1388**.

Propyl-iso-butenyltricarboxylic acid. (Methylpropylcarboxyglutaric
 acid). $C_{10}H_{16}O_6=CO_2H.Me_2C.CPr.(CO_2H)_2$.

$k_A \times 10^3$ at 25°=1.02; increases on diln.; m. p. 167°.

$\mu(32)=150.2$, $(1024)=328$, $(\infty)=350$; **1839**.

α -iso-Propyl- β -iso-butylhydracrylic acid. (α -iso-Propyl- β -iso-butyl-
 ethylenelactic acid). $C_{10}H_{20}O_3$.

[The structure of this acid is not definitely known.]

$k_A \times 10^5=1.9$; increases on diln.; m. p. 120°-121°.

$\mu(58.4)=11.3$, $(467)=36$, $(\infty)=350$; **1454**.

Propylene diamine. $C_2H_{10}N_2=Me.CH(NH_2).CH_3.NH_2$.

Complex salts; **1762**, **1948**.

Propylene glycol. $C_3H_8O_2$.

In NH_3 , qual.; **606**.

Propylfumaric acid. (Ethyl-mesaconic acid).

$C_7H_{10}O_4=CO_2H.CPr.CH.CO_2H$.

$k_A \times 10^4$ at 25°=9.3; increases on diln.; m. p. 173°-174°; **1823**,
1831, **1838**. At 25°, $\mu(64)=76.3$, $(1024)=221$, $(\infty)=355$;
1838.

α -Propylglutaric acid. $C_8H_{14}O_4=CO_2H.(CH_2)_2.CHPr.CO_2H$.

$k_A \times 10^5$ at 24.4°=5.8; m. p. 66°-68°.

$\mu(62.5)=20.2$, $(1000.6)=76.1$, $(\infty)=351$; **1240**.

α -iso-Propylglutaric acid. $C_8H_{14}O_4=CO_2H.(CH_2)_2.CH-iso-Pr.CO_2H$.

$k_A \times 10^5$ at 24.4°=5.6; m. p. 94°; **1240**;=5.3; m. p. 96°; **26**.

At 24.4°, $\mu(36.5)=15.3$, $(1168)=79.3$, $(\infty)=351$; **1240**.

β -iso-Propylglutaric acid. $C_8H_{14}O_4=iso-Pr.CH(CH_2.CO_2H)_2$.

$k_A \times 10^4$ at 25°=6.5; m. p. 100°; **861**.

iso-Propyl-hydroxy-toluene see **Thymol**.

Propylideneacetic acid. ($\alpha\beta$ -Pentenoic acid.)

$C_5H_8O_2=Me.CH_2.CH:CH.CO_2H$.

$k_A \times 10^5$ at 25°=1.6; diminishes on diln. $\Lambda(32)=8.4$, $(1024)=$
 42, $(\infty)=380$; **564**, **571**.

Na.A at 25°, $\Lambda(1024-32)=10-11$; **571**.

Propyl iodide. C_3H_7I .

Cond. with $AlCl_3$; **1893**. With allyl thiocarbimide, no cond.; **1223**.

Propylmalonic acid. $C_6H_{10}O_4 = CHPr(CO_2H)_2$.

$k_A \times 10^3$ at $25^\circ = 1.12$; m. p. $94^\circ - 96^\circ$; **175, 1838**.

$\mu(32) = 61.4$, $(1024) = 230.1$, $(\infty) = 356$; **1838**.

iso-Propylmalonic acid. $C_6H_{10}O_4 = CH\text{-}iso\text{-}Pr(CO_2H)_2$.

$k_A \times 10^3$ at $18^\circ = 1.3$ (colorim.); **1563**. At $25^\circ = 1.27$; m. p. $87^\circ - 90^\circ$; **175, 1838**.

Second $k_A \times 10^7 = 3.5$ (inversion); **1638**.

At 25° , $\mu(32) = 64.9$, $(1024) = 237$, $(\infty) = 356$; **1838**.

iso-Propylmesaconic acid see **iso-Butylfumaric acid**.

Propylmethylcarboxyglutaric acid see **Propyl-iso-butenyltricarboxylic acid**.

Propyl nitrate see **Nitric acid propyl ester**.

iso-Propylphenylethylenelactic acid see **iso-Propylphenylhydroxypropionic acid**.

α -iso-Propyl- β -phenyl- β -hydroxy-propionic acid. (*iso*-Propylphenylethylenelactic acid). $C_{12}H_{16}O_3 = Ph.CHOH.CH\text{-}iso\text{-}Pr.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 5.7$; increases, then diminishes on diln.; m. p. 107° .

$\mu(36.7) = 15.5$, $(1175.7) = 79.3$, $(\infty) = 349$; **1704**.

cis- α -Propyl- α' -iso-propyl-succinic acid.

$C_{10}H_{18}O_4 = CO_2H.CH\text{-}iso\text{-}Pr.CHPr.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 2.97$; m. p. $151^\circ - 152^\circ$.

$\mu(128) = 62.6$, $(1024) = 145.4$, $(\infty) = [350]$; **235**.

trans- α -Propyl- α' -iso-propyl succinic acid. $C_{10}H_{18}O_4$.

$k_A \times 10^4$ at $25^\circ = 1.49$; diminishes on diln.; m. p. $192^\circ - 194^\circ$.

$\mu(256) = 61.7$, $(1024) = 112.7$, $(\infty) = [350]$; **235**.

N-Propylquinolinium iodide di-iodide. (Quinolinium-N-propyl tri-iodide). $C_{12}H_{14}NI_2 = C_9H_7N.PrI.I_2$.

Cond. of molten salt; m. p. 60° ; **1578**.

Propylsuccinic acid. $C_7H_{12}O_4 = CO_2H.CHPr.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 8.9$; diminishes on diln.; m. p. $91^\circ - 92^\circ$; **197, 1823, 1831, 1838**.

Second $k_A \times 10^6 = 1.2$ (inversion); **1638**.

At 25° , $\mu(32) = 18.2$, $(512) = 66$, $(\infty) = 351$; **1838**.

iso-Propylsuccinic acid. $C_7H_{12}O_4 = CO_2H.CH\text{-}iso\text{-}Pr.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 7.5$; diminishes on diln.; m. p. $112^\circ - 115^\circ$; **197, 1823, 1831, 1838; - 1349**.

At 25° , $\mu(64) = 23.6$, $(1024) = 84.5$, $(\infty) = 351$; **1838**.

Propyl sulphuric acid see **Sulphuric acid propyl ester**.

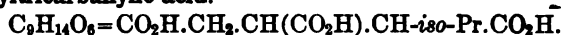
Propyltricarballic acid.

$C_9H_{14}O_6 = CO_2H.CH_2.CH(CO_2H).CHPr.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 3.1$; m. p. 136° ; **67, 1839.**

$\mu(32) = 33.3$, $(1024) = 153.2$, $(\infty) = 350$; **1839.**

iso-Propyltricarballic acid.



$k_A \times 10^4$ at $25^\circ = 4.3$; m. p. 161° ; **67, 1839.**

$\mu(32) = 38.9$, $(1024) = 169$, $(\infty) = 350$; **1839.**

Propyltriphenyl phosphonium chloride. $C_{21}H_{22}ClP = (Pr)(Ph)_3PCl$.

At 25° , $\Lambda(32) = 78.6$, $(1024) = 89.0$; **270.**

Protocatechuic acid see **3,4-Dihydroxy-benzoic acid.**

Protocatechuic aldehyde see **3,4-Dihydroxy-benzaldehyde.**

Protocatechuic aldehyde methylene ether see **Piperonal.**

Protocatechuic aldehyde methyl ether see **Vanillin.**

Pseudo- see under the letter beginning the next word, e. g. *pseudo-Isatin*, see under **I.**

Pulegonic acid. $C_{10}H_{18}O_3 = OH.C_9H_{16}.CO_2H$.

$\mu(32) = 118.0$, $(1024) = 129.9$; **1969.** [This probably is the measurement of a salt, since the object was to determine the basicity of the acid.]

Purpuric acid. $C_8H_5O_6N_5$.

$k_A \times 10^3$ at $0^\circ = 1.58$. At 0° , $\mu(512) = 225$, $(\infty) = 248.8$; **773.**

$NH_4.A$ (Murexide) $= C_8H_5O_6N_5$ or $C_8H_{10}O_7N_5$, at 0° , $\Lambda(256) = 51.2$, $(1024) = 51.8$; **773.** In NH_3 , qual.; **606.**

Purpurin. (1,2,4-Trihydroxy-anthraquinone). $C_{14}H_5O_5$.

$Na.A$ at 25° , $\Lambda(32) = 65.4$, $(1024) = 83.5$.— $2Na.A$ at 25° , $\Lambda(32) = 76.8$, $(1024) = 97.9$.— $3Na.A$ at 25° , $\Lambda(32) = 69.2$, $(1024) = 80.9$; **1275.**

Pyrazole. $C_2H_4N_2$.

In molten state, fair cond.; **977.**

$k_B \times 10^{13}$ [at 25°] = 3 (catal.); m. p. 70° ; **428.**

Cond. equals that of a 1% $NaCl$ soln.; **977.**

Pyridine. C_5H_5N .

$\alpha \times 10^8$ at 0° ; **786.** At $18^\circ = 5$; b. p. 116° – 118° ; **478**; — **1057.**

At 25° is less than 2; b. p. 114° – 117° ; **1084, 1388, 1569, 754**; — **347, 767a, 786, 817a, 943, 1106, 1107, 1250, 1389.**

$k_B \times 10^9$ at $10^\circ = 1.06$ (hydrol.). At $15^\circ = 1.41$ (hydrol.); **1144**; = 1.06 (colorim.); **1777.** At $25^\circ = 2.3$ (hydrol.). The extremes are 2.1 (hydrol.) and 3.0 (hydrol.); **270, 402, 664, 1144.** At $40^\circ = 4.25$ (hydrol.); **1144.** At $50^\circ = 6.19$ (hydrol.); **1144.** At $60^\circ = 8.6$ (hydrol.); **1144**; = 8.5 (inversion); **1880** and **1144.**

Cond.; **786, 1389.**

In HBr , HI and H_2S , good cond.; **1897.** In HCN ; **943.** In SO_2 ; **1842, 1855.** In NH_3 , qual.; **606.** In benzene, no cond.; **935.** In $MeNH_2$, no cond.; **637.**

Cond. with inorg. compounds; 511, 520, 748, 786, 1106, 1107, 1388, 1389, 1481, 1482. With organic compounds; 934, 1084, 1106, 1107, 1223, 1388, 1569. As solvent; 321, (347), 478, 480, 488, (520), 753, 754, 767a, (817a), 934, 1057, 1084, 1106, 1250, 1388, (1389), 1569, (1818), 1991.

B.HBr in organic solvents; 1552a. - B.HCl at 25°, $\Delta(64)=104.1$, (256)=108.6; 270; 1864. At 10°-50°; 1144. - B.HI; 753. - B.HNO₃; 664. - B.H₂SO₄; 1864. - B.Acetate; 145a, 1144. - B.Picrate at 25°, $\Delta(128)=64.1$, (512)=68.2; M(128)=70.6; 402; 753. - B.Trinitro-methane; 753. - B.EtCl. - B.MeCl; 270. - B.MeI; 753. - B.MeI.Br₂; 1578. - Complex salts; 520, 550, 1384, 1417, 1481, 1482, 1572, 1750, 1751, 1755, 1757, 1760a.

Pyridinebenzoic acid see Phenylpyridine carboxylic acid.

Pyridine-2-carboxylic acid. (Picolinic acid). C₆H₅O₂N.

$k_A \times 10^6$ at 25°=5; diminishes on diln. $\Delta(64)=6.6$, (1024)=21.4, (∞)=357; 1372.

Cond. not increased by boric acid; 1186.

Pyridine-3-carboxylic acid. (Nicotinic acid). C₆H₅O₂N.

$k_A \times 10^6$ at 25°=1.37. $\Delta(128)=14.3$, (1024)=39.3, (∞)=357; 1372.

Cond. not increased by boric acid; 1186.

Na.A at 25°, $\Delta(32)=68.4$, (1024)=78.8; 1369.

Pyridine-4-carboxylic acid. (*iso*-Nicotinic acid). C₆H₅O₂N.

$k_A \times 10^6$ at 25°=1.09.

$\Delta(128)=13.1$, (1024)=36, (∞)=357; 1372.

Pyridine-2,3-dicarboxylic acid. (Quinolinic acid).

C₇H₅O₄N=C₆H₃N(CO₂H)₂.

$k_A \times 10^8$ at 25°=3; diminishes on diln.; aq. used for soln. was impure.

$\mu(64)=125.5$, (1024)=276.2, (∞)=355; 1372.

2Na.A at 25°, $\mu(32)=77.2$, (1024)=97.0; 1369, 1838.

Pyridine-2,3-dicarboxylic acid 2-mono methyl ester. (α -ester).

C₈H₇O₄N=C₆H₃N(CO₂Me)(CO₂H). [CO₂Me=2; CO₂H=3.]

$k_A \times 10^8$ [at 25°]=2.65; m. p. 123°.

$\mu(64)=117.7$, (1024)=274.1, (∞)=353; 967.

Pyridine-2,3-dicarboxylic acid 3-mono methyl ester. (β -ester).

C₈H₇O₄N. [CO₂H=2; CO₂Me=3.]

$k_A \times 10^8$ [at 25°]=1.38; m. p. 106°.

$\mu(64)=91.5$, (1024)=236.9, (∞)=353; 967.

Pyridine-2,4-dicarboxylic acid. (*o,p*-Lutidinic acid). C₇H₅O₄N.

$k_A \times 10^8$ at 25°=6; diminishes on diln.; aq. used for soln. was impure.

$\mu(128)=203.1$, (1024)=304.7, (∞)=355; 1372.

Pyridine-2,5-dicarboxylic acid. (*iso*-Cinchomeric acid). $C_7H_5O_4N$.
 $k_A \times 10^3$ at $25^\circ = 4.3$; diminishes on diln.; aq. used for soln. was impure.

$\mu(128) = 182.9$, $(1024) = 293.8$, $(\infty) = 355$; **1372**.

Pyridine-3,4-dicarboxylic acid. (Cinchomeric acid). $C_7H_5O_4N$.

$k_A \times 10^3$ at $25^\circ = 2.1$; diminishes on diln.; aq. used for soln. was impure.

$\mu(128) = 141.5$, $(1024) = 257.2$, $(\infty) = 355$; **1372**.

Pyridine-3,4-dicarboxylic acid mono ethyl ester.

$C_9H_9O_4N = C_5H_5N(CO_2H)(CO_2Et)$.

$k_A \times 10^4$ at $25^\circ = 5$; diminishes on diln.; impure.

$\mu(150.1) = 84.1$, $(1200.8) = 180.9$, $(\infty) = 355$; **175**.

Pyridine-3,4-dicarboxylic acid 3-mono methyl ester. (β -ester).

$C_8H_7O_4N$. [$CO_2Me = 3$; $CO_2H = 4$.]

$k_A \times 10^4$ [at 25°] = 6.66; m. p. 182° .

$\mu(64) = 65.4$, $(1024) = 195$, $(\infty) = 353$; **967**.

Pyridine-3,4-dicarboxylic acid 4-mono methyl ester. (γ -ester).

$C_8H_7O_4N$. [$CO_2H = 3$; $CO_2Me = 4$.]

$k_A \times 10^4$ [at 25°] = 6.7; increases on diln.; m. p. 172° ; **967**; = 3.3; impure; **175**.

$\mu(64) = 64.8$, $(1024) = 195.8$, $(\infty) = 353$; **967**.

Pyridine-3,5-dicarboxylic acid. (Dinicotinic acid. $\beta\beta$ -Pyridinedicarboxylic acid). $C_7H_5O_4N$.

$k_A \times 10^3$ at $25^\circ = 1.5$; aq. used for soln. was impure.

$\mu(256) = 161.4$, $(1024) = 245.1$, $(\infty) = 355$; **1372**.

Pyridinepentacarboxylic acid. $C_{10}H_5O_{10}N = C_5N(CO_2H)_5$.

At 25° , $\mu(256) = 610$, $(1024) = 763$; **1372**.

5Na.A at 25° , $\mu(32) = 77.7$, $(1024) = 127.8$; **1369**.

Pyridine-2,3,4,5-tetracarboxylic acid. $C_6H_4O_8N$.

At 25° , $\mu(256) = 466$, $(1024) = 590$; **1372**.

4Na.A at 25° , $\mu(32) = 80.8$, $(1024) = 121.2$; **1369**.

Pyridine-2,3,4-tricarboxylic acid. $C_8H_5O_6N$.

At 25° , $\mu(256) = 337$, $(1024) = 438$; **1372**.

3Na.A at 25° , $\mu(32) = 82.1$, $(1024) = 113.1$; **1369**.

Pyridine-2,3,5-tricarboxylic acid. $C_8H_5O_6N$.

At 25° , $\mu(256) = 327$, $(1024) = 439$; **1372**.

3Na.A at 25° , $\mu(32) = 82.4$, $(1024) = 111.8$; **1369**.

Pyridine-3,4,5-tricarboxylic acid. $C_8H_5O_6N$.

At 25° , $\mu(256) = 278$, $(1024) = 371$; **1372**.

Pyrocatechic acid see Camphopyric acid.

Pyrocatechol. (1,2-Dihydroxy-benzene. Pyrocatechin).

$C_6H_6O_2 = C_6H_4(OH)_2$.

$k_A \times 10^{10}$ at $18^\circ = 3.3$ (hydrol.); **524**. At $25^\circ = 4$; **1397c**. Also; **70**.

Cond. At 25°, $\mu(16)=0.03$, $(32)=0.05$, $(\infty)=381$; **1397c**. At 25°, $\mu(32.8)=0.33$, $(65.6)=0.61$, $(\infty)=356$; **70**. Also; **1134**, **1508**, **1718**.

In NH_3 , qual.; **606**.

Cond. with boric acid; **756**, **1184**. With NaOH ; **1017**, **1508**, **1718**. With FeCl_3 ; **756**.

$2(\text{NH}_4)\text{.A}$ at 18°, $\Delta(100)=42.9$, $(200)=44.3$; **524**.

Pyrocatechol mono methyl ether see **Guaiacol**.

Pyrocinchonic acid see **Dimethyl-maleic acid**.

Pyrocinchonic anhydride see **Dimethyl-maleic acid anhydride**.

Pyrogallol. (1,2,3-Trihydroxy-benzene). $\text{C}_6\text{H}_6\text{O}_3=\text{C}_6\text{H}_3(\text{OH})_3$.

$k_A=?$ At 25°, $k \times 10^8$ increases from 5.1 to 17; **70**.

Cond.; **1184**, **1508**, **1718**. At 25°, $\mu(56)=0.60$, $(448)=3.12$, $(\infty)=355$; **70**.

In HBr and H_2S , no cond.; **1897**. In NH_3 , qual.; **606**. In MeNH_2 , good cond.; **637**.

Cond. with boric acid; **1184**. With NaOH ; **1508**, **1718**.

Pyrogallol aldehyde. (2,3,4-Trihydroxy-benzaldehyde).

$\text{C}_7\text{H}_6\text{O}_4=\text{CHO.C}_6\text{H}_3(\text{OH})_3$. [$\text{CHO}=1$.]

$k_A \times 10^4$ at 25°=1.14; m. p. 157°.

$\mu(256)=59.5$, $(1024)=102.4$, $(\infty)=355$; **643**.

Pyrogallol carboxylic acid. (2,3,4-Trihydroxy-benzoic acid).

$\text{C}_7\text{H}_6\text{O}_5=\text{CO}_2\text{H.C}_6\text{H}_3(\text{OH})_3$. [$\text{CO}_2\text{H}=1$.]

$k_A \times 10^4$ at 18°=6 (colorim.); **1563**. At 25°=5.3; increases on diln.; **1186**, **1371**.

At 25°, $\mu(64)=58.8$, $(1024)=186.9$, $(\infty)=356$; **1371**.

In Et alc.; **1185**, **1508**, **1718**.

Cond. with boric acid; **1185**, **1186**. With NaOH ; **1508**, **1718**.

Pyromeconic acid. $\text{C}_5\text{H}_4\text{O}_3=\text{C}_5\text{H}_3\text{O}_3(\text{OH})$.

At 25°, $\mu(32)=0.54$; this cond. is due to traces of impurity; the pure compound would have only one-tenth as much; **1372**.

[This measurement gives $k_A \times 10^8=6$.]

Pyromellitic acid. $\text{C}_{10}\text{H}_6\text{O}_8=\text{C}_6\text{H}_2(\text{CO}_2\text{H})_4$.

At 25°, $\mu(69.9)=240.5$, $(1118.4)=505.2$; **175**.

Pyromucic acid. (Furfurane-2-carboxylic acid). $\text{C}_5\text{H}_4\text{O}_3$.

$k_A \times 10^4$ at 0°=8.7. At 12°=8.1; **1968a**. At 25°=7.6; **1968a**;=7.1; **1186**, **1372**. At 35°=7.0; **1968a**.

Cond. at 0°-35°; **1968a**. At 25°, $\mu(32)=51.2$, $(1024)=201.3$, $(\infty)=355$; **1968a**. $\mu(32)=50.5$, $(\infty)=359$; **1372**.

Cond. with boric acid; **1186**.

Na.A at 25°, $\mu(32)=69.8$, $(1024)=80.6$; **1368a**. At 0°-35°; **1968a**.

iso-Pyromucic acid. $\text{C}_5\text{H}_4\text{O}_3$.

$k_A \times 10^8$ is about 3; diminishes on diln.; m. p. 92°.

$\mu(29.4)=0.32$, $(70.4)=0.45$, $(\infty)=358$; **375**.

Pyroncarboxylic acid. (2-Methylpyrone-6-acetic acid). $C_8H_8O_4$.

$k_A \times 10^5 = 1.52$; m. p. 99°; **399**. [In **400** this is given, $k \times 10^5 = 1.52$, probably from a typographical error. No measurements are given.]

Pyropapaverinic acid. $C_{18}H_{18}O_5N = (MeO)_2.C_6H_5.CO.C_6H_5N.CO_2H$.

At 25°, $k_A \times 10^4$ at $v(753) = 1.3$, at $v(1506) = 0.88$; from analogy to papaverinic acid a calculation gives $k \times 10^5$ as about 1.5; [the assumptions in this calculation are of doubtful validity].
 $\mu(753) = 94.7$, $(1506) = 106.1$, $(\infty) = 350$; **175**.

Pyropapaverinic acid oxime.

$C_{18}H_{14}O_5N_2 = (MeO)_2.C_6H_5.C(NO_2H).C_6H_5N.CO_2H$.

$k_A \times 10^5$ at 25° = 3.7; diminishes on diln.
 $\mu(883) = 58$, $(1766) = 67.1$, $(\infty) = 350$; **175**.

Pyropapaverinic acid phenylhydrazone.

$C_{21}H_{19}O_4N_2 = (MeO)_2.C_6H_5.C(HN_2Ph).C_6H_5N.CO_2H$.

$k_A \times 10^6$ at 25° = 3.8.
 $\mu(1130) = 22.2$, $(2260) = 29.5$, $(\infty) = 350$; **175**.

Pyroracemic acid. (Acetyl formic acid. Pyruvic acid).

$C_3H_4O_3 = Me.CO.CO_2H$.

$k_A \times 10^3$ at 25° is about 5.6 (inversion); **768**; is about 3 (cond.); diminishes on diln.; **1370**.

In H_2SO_4 ; **223**.

Cond. not increased by boric acid; **1184**.

Pyrotartaric acid. (Methylsuccinic acid).

$C_6H_8O_4 = CO_2H.MeCH.CH_2.CO_2H$.

$k_A \times 10^5$ at 0° = 7.9. At 12° = 7.9; **1968a**. At 17° = 8.3 aq.; **164**; (colorim.); **1781**. At 25° = 8.6; m. p. 111°; **234**, **1371**, **1500b**, **1823**, **1831**, **1838**; = 8.7; **1968a**. At 35° = 8.9; **1968a**.

Second $k_A \times 10^6 = 1.6$ (inversion); **1335**, **1638**.

Cond. at 0°–35°; **1968a**. At 17°; **171**. At 25°, $\mu(32) = 18.1$, $(512) = 66.5$, $(\infty) = 354$; **1838**. $\mu(1024) = 89.7$, $(\infty) = 349$; **1968a**.

Cond. with KOH; **171**.

K.A. – 2K.A; **164**. – Na.A at 25°, $\mu(32) = 70$, $(1024) = 89$; **1838**.

– 2Na.A at 25°, $\mu(32) = 78$, $(1024) = 96$; **1838**; **270**, **1367**, **1823**, **1831**, **1837**.

Pyrotartaric acid anhydride. $C_5H_6O_3$.

Cond. of soln. showing change to acid; **1500b**.

Pyrotartaric acid mono methyl ester.

$C_6H_{10}O_4 = CO_2Me.MeCH.CH_2.CO_2H$.

Three different preparations gave; $k_A \times 10^5$ at 25° = 3.90 for ester, b. p. 140° @ 11 mm.; = 3.85 for ester, b. p. 142°–143° @ 15 mm.; = 3.80 for ester, b. p. 138°–140° @ 13 mm.

$\mu(42.4)=14.1$, $(169.6)=27.6$, $(\infty)=353$; for the first ester, $k=3.90$; **244**.

α -iso-Pyrotartaric acid see Ethylmalonic acid.

β -iso-Pyrotartaric acid see Dimethyl-malonic acid.

Pyrrole. C_4H_5N .

In HBr, HCl and HI, good cond. In H_2S , no cond.; **1897**.

Pyrrole-2-carboxylic acid. (Carbopyrrolic acid). $C_4H_5O_2N$.

$k_A \times 10^5$ at $25^\circ=4.03$ aq.; m. p. 192° ; **23**; $=3.65$ aq.; **1186**.

$\Delta(40)=14.2$, $(1280)=72.8$, $(\infty)=359$; **23**.

Cond. with boric acid; **1186**.

2-Pyrrolepyrroacemic acid. $C_8H_7O_4N=C_4H_4N.CO.CH_2.CO.CO_2H$.

$k_A \times 10^4$ at $25^\circ=8.9$ aq.; from soln. of the anhydride in aq.; diminishes on diln. $\Delta(200)=121.6$, $(1600)=236.3$, $(\infty)=355$; **23**.

2-Pyrrolepyrroacemic acid anhydride. (2-Pyrrolylpyrroacemic acid anhydride). $C_8H_5O_3N$.

For measurement see the acid.

Pyrrolidine- α -carboxylic acid. (Proline). $C_5H_9O_2N$.

Cond.; m. p. 206° - 207° ; **145b**.

Pyrroylcarboxylic acid see Pyrrolyglyoxylic acid.

2-(α)-Pyrrolyglyoxylic acid. (α -Pyrroylcarboxylic acid).

$C_6H_5O_2N=C_4H_4N.CO.CO_2H$.

$k_A \times 10^3$ at $25^\circ=9.7$ aq.; diminishes on diln. from decomposition.

$\Delta(60)=188$, $(960)=263.4$, $(\infty)=358$; m. p. 76° ; **23**.

Pyruvic acid see Pyroacemic acid.

Q.

Quillaja. [The references to this are not complete.]

Cond. of soln. of bark; **146**.

Quinaldine. (2-Methyl quinoline). $C_{10}H_9N$.

$k_B \times 10^9$ at $14^\circ=3.6$ (colorim.); **1777**. At 25° is about 4 (hydrol.); **664**.

B.HCl at 25° , $\Delta(64)=90.4$, $(256)=95.2$; **270**; - **1864**. - B. H_2SO_4 ; **1864**.

Quinaldinic acid. (α -Quinoline carboxylic acid. Quinoline-2-carboxylic acid). $C_{10}H_7O_2N$.

$k_A \times 10^5$ at $25^\circ=1.26$; diminishes on diln. $\Delta(128)=13.9$, $(1024)=34.8$, $(\infty)=355$; **1372**.

Quinalizarin. (1,2,5,8-Tetrahydroxy-anthraquinone). $C_{14}H_8O_6$.

2Na.A at 25° , $\Delta(32)=95.6$, $(1024)=118.4$. - 3Na.A at 25° , $\Delta(32)=120.6$, $(1024)=133.5$. - 4Na.A at 25° , $\Delta(32)=138.6$, $(1024)=152.7$; **1275**.

Quinic acid. $C_7H_{12}O_6 = (OH)_4C_6H_7.CO_2H$.

$k_A \times 10^4$ at $14.1^\circ = 2.77$; m. p. 161° ; **541**. At $18^\circ = 2.6$ (colorim.);

1563. At $25^\circ = 2.9$ aq.; **1186**; $= 2.8$ increasing on diln.; **1648**.

Cond.; **1495**. At 25° , $\mu(32) = 32.7$, $(512) = 108$, $(\infty) = 350$; **1186**.

In Et alc.; **1185**.

Cond. with boric acid; **1185**, **1186**. With MoO_3 ; **1495**. With ZrO_2 and $NaOH$; **1648**.

inact.-Quinic acid. $C_7H_{12}O_6$.

$k_A \times 10^4$ at $9^\circ = 2.2$; **541**.

Quinic acid see also Quininic acid.

Quinidine. (Conquinine). $C_{20}H_{24}O_2N_2$.

$k_B \times 10^7$ at $15^\circ = 2.36$ (hydrol.); **1779**.

Second $k_B \times 10^{10} = 3.2$ (colorim.); **1776**.

Cond. with o-bromocamphor sulphonic acid in aq. and in acetone; **1841**.

Quinine. $C_{20}H_{24}O_2N_2$.

$k_B \times 10^7$ at $15^\circ = 2.16$ (colorim.); **1779**. At $16^\circ = 26$ (colorim.);

98a. At $18^\circ = 17$ (cond.); **1224**. At $25^\circ = 120$ aq. (cond.); **1241**.

Second $k_B \times 10^{10} = 3.3$ (hydrol.); **1776**; $= 1.3$ (colorim.); **98a**.

At 18° , $\mu(1671) = 10.3$, $(\infty) = 196$; **1224**. At 25° , $\mu(1335.7) = 21.5$, $(\infty) = 189.4$; **1241**.

In SO_2 ; **1842**.

With allyl thiocarbimide, no cond.; **1223**.

B.HBr in SO_2 ; **1842**. - B.HCl at 25° , $\Lambda(32) = 75.8$, $(1024) = 89.1$;

270; **1224**, **304**. In SO_2 ; **1842**. - B.HF and B.HI in SO_2 ;

1842. - B. HNO_3 ; **304**, **1611**. - B. H_3PO_2 in NH_3 , qual.; **606**.

- B. H_2SO_4 ; **304**. - 2B. H_2SO_4 ; **304**; qual.; **943**, **1223**. - B.Ace-tate; **304**.

Quininic acid. (6-Methoxy-quinoline-4-carboxylic acid. Quinic acid. Xanthoquinic acid methyl ether). $C_{11}H_9O_2N$.

$k_A \times 10^6$ at $25^\circ = 9.7$; diminishes on diln. $\Lambda(256) = 17.1$, $(1024) = 31.4$, $(\infty) = 351$; **1372**.

Quinol see Hydroquinone.

Quinoline. C_9H_7N .

$\alpha \times 10^7$ at $0^\circ = 3.8$; **1844**. At $25^\circ = 3.7$; **1106**, **1107**.

$k_B \times 10^9$ at $15^\circ = 1.6$ (colorim.); **1777**. At $25^\circ = 0.8$ (hydrol.); **664**. At $60^\circ = 7.4$ (inversion); **1880**.

In HBr and H_2S , fair cond.; **1897**. In HCN, small cond.; **943**.

In SO_2 ; **1842**, **1855**. In $AsCl_3$, in $POCl_3$, and SO_2Cl_2 ; **1842**.

In NH_3 , qual.; **606**.

Cond. with inorg. compounds; **1106**, **1107**, **1481**. With organic compounds; **1388**. As solvent; **1844**.

B.HCl at 25°, $\Delta(64)=95.6$, (256)=99.2; **270**; **1864**. - B.H₂SO₄; **1864**. - B.MeCl; **270**. - B.MeI; **1844**. - B.HI.I₂, - B.BuI.I₂, - B.*iso*-BuI.I₂, - B.EtI.I₂, - B.MeI.I₂, - B.MeI.I₄, - B.PrI.I₂; cond. of these iodides in molten state; **1578**.

iso-Quinoline. C₉H₇N.

$k_B \times 10^9$ at 15°=3.6 (colorim.); **1777**. [10¹⁰ in **1777** is a typographical error.]

In NH₃, qual.; **606**.

B.HCl at 25°, $\Delta(64)=95.2$, (256)=100.1. - B.MeCl; **270**.

α -Quinoline carboxylic acid see Quinaldinic acid.

γ -Quinoline carboxylic acid see Cinchoninic acid.

Quinolinic acid see Pyridine-2,3-dicarboxylic acid.

Quinone see *p*-Benzoquinone.

Quinone-*p*-oxyphenyl-hydrazone see *p*-Azophenol.

R.

Racemic acid see *para*-Tartaric acid.

Raffinose. C₁₅H₃₂O₁₆.

Cond. alone and with lactose; **1747**. Cond. with KCl; **145b**.

In NH₃, qual.; **606**.

Resorcinol. (1,3-Dihydroxy-benzene). C₆H₆O₂=C₆H₄(OH)₂.

$k_A \times 10^9$ at 0° is less than 3.1; **733**. At 18°=0.36 (hydrol.); **524**.

At 25° is less than 6; **733**. - (solub.); **1116**; (cond.); **70**. At 40° is less than 37; **733**.

Cond.; **70**, **733**, **1184**, **1508**, **1718**. At 25°, $\mu(34.1)=0.3$, (68.2)=2.1, (∞)=356; **70**. $\mu(32)=0.14$; **733**.

In HBr; **29**. In HCN, no cond.; **943**. In NH₃, qual.; **606**. In MeNH₂, good cond.; **637**.

Cond. with boric acid; **1184**. With NaOH; **1017**, **1508**, **1718**.

With FeCl₃; **756**.

NH₄ salt at 18°, $\Delta(200)=44.4$, (400)=46.2; **524**.

Resorcyaldehyde see 2,4-Dihydroxy-benzaldehyde.

Resorcylic acid see 2,4-Dihydroxy-benzoic acid and 2,6-Dihydroxy-benzoic acid.

Rhamnus Frangula. (Buckthorn). [The references to this are incomplete.]

Cond. of soln. of bark; **146**.

Rhodamine. [C₂₀H₁₄O₃N₂? There are several Rhodamines of different composition. The following references do not state which was used.]

In Et alc., cond. is increased by light; **833**, **1321**.

Rhodanic acid see Rhodanin.

Rhodanin. (Dithio-carbamine glycollic acid anhydride. Rhodanic acid.) $C_6H_5ONS_2 = CO.CH_2S.CS.NH$.

$k_A \times 10^6$ at $25^\circ = 3$ (catal.); m. p. 168° – 169° ; **854**.

Rhodanoacetic acid see Thiocynoacetic acid.

Rhodizonic acid. $C_6H_5O_6 = C_6O_4(OH)_2$?

At 25° , $\mu(254.8) = 130.6$, $(1019.1) = 161.3$.

Na.A at 25° , $\mu(128) = 178.6$, $(1024) = 198.7$; **389**.

Ricinus communis. (Castor oil plant). [The references to this are incomplete.]

Cond. of sap of root and stalk; **253**, **1326**.

Roccelline see Naphthalene sulphonic acid azo- β -naphthol.

Rosa banksia. [The references to this are incomplete.]

Cond. of sap; **253**.

Rosaniline see Fuchsine.

p-Rosaniline see Triamino-triphenyl-carbinol.

Rosindone. (Rosindulone). $C_{22}H_{14}ON_2$.

Is a non-electrolyte; **770**.

B.Cl see under Chlorophenylnaphthophenazonium hydroxide.

Rosinduline. $C_{22}H_{15}N_3$.

Pure rosinduline is a pseudo-base with no cond. The salts are formed from Rosindulinium hydroxide, $C_{22}H_{15}N_3.OH$; which gives at 25° , $\mu(512) = 23.4$.

B.Cl = $C_{22}H_{15}N_3.Cl$ (Rosinduline HCl); at 25° , $\mu(256) = 94.0$, $(1024) = 95.9$; **770**.

Rosindulone see Rosindone.

Rosolic acid. $C_{20}H_{10}O_4$.

$k_A \times 10^8$ at $18^\circ = 1.1$ (colorim.); **1562**.

S.

d-Saccharic acid. $C_6H_{10}O_8 = (OH)_4C_4H_4(CO_2H)_2$.

At 25° , $k_A \times 10^8$ is about 1, calculated from values given by a slightly impure acid; **1249**; is about 1.9; aq. used for soln. was impure; **1362**. [In **1249** the value of $\Lambda(\infty)$ is given as 330, an unusual value.]

At 25° , $\Lambda(32)$ is about 60, (1024) is about 225; $(\infty) = 330$; **1249**.

In HCl, no cond.; **30**.

Saccharin. (Saccharinic acid anhydride or lactone). $C_6H_{10}O_5$.

$k_A \times 10^6$ at $25^\circ = 1.3$; diminishes on diln.; **1823**, **1831**.

Cond.; **1493**. At 25° , $\mu(32) = 2.3$, $(128) = 4$, $(\infty) = 358$; **1823**.

Saccharin see Benzoic sulphinide.

iso-Saccharin. (iso-Saccharinic acid anhydride or lactone). $C_6H_{10}O_5$.

$k_A \times 10^4$ at $25^\circ = 1.8$; diminishes on diln.; **1823, 1831.**

$\mu(32) = 2.7$, $(128) = 4.5$, $(\infty) = 358$; **1823.**

Saccharinic acid. (Glycosaccharic acid). $C_6H_{12}O_8 = (OH)_4C_6H_7.CO_2H$.

K.A at 25° , $\Delta(32) = 78.9$, $(1024) = 99.2$. - Rb.A; **1493.**

Saccharinic acid anhydride see **Saccharin.**

Saccharinic acid lactone see **Saccharin.**

iso-Saccharinic acid lactone see **iso-Saccharin.**

d-Saccharo-lactonic acid.



$k_A \times 10^4$ at $25^\circ = 1.7$; m. p. $129^\circ - 130^\circ$. [The value of $\Lambda(\infty)$ used here is 330, an unusual value.] $\Lambda(32) = 67$, $(1024) = 235.8$, $(\infty) = 330$; **1249.**

Saccharose. (Cane sugar. Sucrose). $C_{12}H_{22}O_{11}$.

$k_A \times 10^{12}$ at $10^\circ = 0.7$ (catal.). At $18^\circ = 1.14$ (catal.); **1177** and **1150.** At $20.7^\circ = 1.1$ (catal.); **1036.** At $25^\circ = 1.85$ (catal.). At $40^\circ = 4.3$ (catal.); **1177** and **1150.** (Colorim.); **1639b.**

Cond.; **588, 641, 686, 1036, 1108, 1110, 1222, 1478, 1747, 1983.**

In NH_3 , qual.; **606.** In $MeNH_2$, small cond.; **637.**

Cond. with inorg. acids and bases; **741, 1035, 1039, 1220, 1383.**

With inorg. salts; **145b, 210a, 324, 686, 1220, 1432, 1983.**

With organic compounds; **45, 1468, 1569, 1639b, 1747.**

Salicin. $C_{12}H_{18}O_7$.

In NH_3 , qual.; **606.**

Salicyl aldehyde see **o-Hydroxy-benzaldehyde.**

homo-Salicyl aldehyde see **Hydroxy-toluic aldehyde.**

Salicylamide see **o-Hydroxy-benzoic acid amide.**

Salicylhydroxamic acid. $C_7H_7O_2N = OH.C_6H_4.CH.N.OH$.

$k_A \times 10^6$ [at 25°] = 6.4.

$\mu(32) = 5$, $(128) = 11.2$, $(\infty) = [380]$; **1353a.**

Salicylic acid see **o-Hydroxy-benzoic acid.**

iso-Salicylic acid see **iso-o-Hydroxy-benzoic acid.**

Saliva. [The references to this are incomplete.]

Cond.; **257, 290a, 878, 879, 880, 881, 1447a; 253.** Concentration of H and OH ions; **587.**

Sambucus nigra. (Elder). [The references to this are incomplete.]

Cond. of sap; **253.**

Saponin. There are a number of saponins of different formulae;

$C_{17}H_{32}O_{10}$, $C_{18}H_{34}O_{10}$, $C_{19}H_{36}O_{10}$, $C_{22}H_{42}O_{17}$, $C_{22}H_{44}O_{18}$. See also Weil, Arch. Pharm. 239, 363, (1901).

Soln. of saponin, $C_{18}H_{34}O_{10}$, has no cond.; **2013.**

In benzene; **931.**

Cond. with NaOH; **617a.** With allyl thiocarbimide, no cond.; **1223.**

Sarcosine see **Methylamino-acetic acid**.

Scombrine. $C_{20}H_{30}O_6N_{16}$.

$B.2H_2SO_4$ shows increase of cond. after digestion with trypsin;
145b.

Sebacic acid. $C_{10}H_{18}O_4 = CO_2H.(CH_2)_8.CO_2H$.

$k_A \times 10^6$ at $18^\circ = 2.5$ (colorim.); 1563. At $25^\circ = 2.76$; m. p. 128° ;
279; $= 2.8$ aq.; m. p. 134.5° ; 1810; $= 2.34$; 1371, 1638.

Second $k_A \times 10^6 = 2.6$ (part.); $= 2.5$ (cond.); 370; $= 2.6$ (inversion);
1638.

At 25° , $\mu(256) = 28$, $(1024) = 54.3$, $(\infty) = 350$; 279.

In HBr and HCl, no cond.; 30.

Na.A; 370. - $2Na.A$ at 25° , $\Delta(32) = 69.4$, $(1024) = 84.4$; 270;
370.

Sebacic acid anhydride. $C_{10}H_{16}O_3$.

Cond. of soln. showing change to acid; 1810.

Sebacic acid mono ethyl ester. $C_{12}H_{22}O_4 = CO_2H.(CH_2)_8.CO_2Et$.

$k_A \times 10^6$ at $25^\circ = 1.4$; m. p. 38° .

$\mu(483) = 28.1$, $(966) = 38.8$, $(\infty) = 350$; 1859.

Selenium see **Diethyl selenium thetine**, and the following compounds.

Selenium diglycollic acid. $C_4H_4O_4Se = Se(CH_2.CO_2H)_2$.

$k_A \times 10^4$ [at 25°] $= 4.2$.

$\mu(32) = 39.2$, $(1024) = 183.6$, $(\infty) = 358$; 1134.

Selenium dilactylic acid. $C_6H_{10}O_4Se = Se(C_2H_4.CO_2H)_2$.

(a) $k_A \times 10^4$ at $25^\circ = 4.16$; m. p. 145° . $\mu(42.4) = 43.5$, $(1356.2) =$
 187.6 , $(\infty) = 356$.

(b) $k_A \times 10^4$ at $25^\circ = 3.8$; increases on diln.; m. p. 109° .

$\mu(44.2) = 42.4$, $(1413) = 187$, $(\infty) = 356$; 403.

Semicarbazide. $CH_3ON_3 = NH_2.CO.NH.NH_2$.

$k_B \times 10^{10}$ at $15^\circ = 91$ (colorim.); 1775. At $40.2^\circ = 0.26$ (catal.);
1995.

Senna. [The references to this are incomplete.]

Cond. of soln. of leaves; 146.

Serum see **Blood**.

Serum globulin. [The references to this are incomplete.]

Serum globulin is probably a mixture of at least two compounds.

The following references are to the globulin of the blood of
the horse and ox.

As acid, at 20° , it is about the strength of phosphoric acid,
(catal.); 783a.

Cond. of suspension in aq. at 18° ; 783a.

Cond. with inorg. acids; 783a, 1503. With inorg. bases; 617a,
783a, 1503. With organic acids; 783a. Concentration of H
ions; 1511b.

Shikimic acid. $C_7H_{10}O_5$.

$k_A \times 10^5$ at $14.1^\circ = 7.1$; m. p. 184° . [The same measurement is given in both references.] $\mu(41) = 15.9$, $(1305) = 78.4$, $(\infty) = 303$; **541, 838**.

Silicic acid tetra ethyl ester. $C_8H_{20}O_4Si = Si(OEt)_4$.

$\kappa \times 10^8$ at 25° is less than 3; b. p. 165.5° @ 740 mm.

Cond. with trichloro-acetic acid; as solvent; **1223**.

Silicic acid tetramethyl ester. $C_4H_{12}O_4Si = Si(OMe)_4$.

$\kappa \times 10^6$ at $25^\circ = 1.6$; b. p. $120^\circ - 122^\circ$.

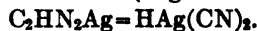
Cond. with $FeCl_3$ and with trichloro-acetic acid; as solvent; **1223**.

Silicon. See the preceding and succeeding compounds.

Silicon tetraphenyl. $C_{24}H_{20}Si = Ph_4Si$.

In SO_2 ; **1842**.

Silver. See the succeeding compound, and **971**.

Silver cyanic acid. (Argenti- or argento- cyanic acid).

See **510**.

K.A at 25° , $\Lambda(32) = 103.2$, $(1024) = 115.5$; **1832, 971; - 1434a**.

In organic solvents.; **1434a**.

Skatolecarboxylic acid see **3-Methyl-indole-3-carboxylic acid**.**Solanum laciniatum.** [The references to this are incomplete.]

Cond. of fruit; **1326**.

Soluble Blue see **Helvetia Blue**.**Sorbic acid.** $C_8H_8O_2 = MeCH:CH.CH:CH.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.73$.

$\Lambda(128) = 16.2$, $(1024) = 44.3$, $(\infty) = 355$; **1371**.

In HCl , small cond.; **30**.

Sparteine. $C_{16}H_{28}N_2$.

$k_B \times 10^4$ at 15° is over 1 (hydrol.); **1779**.

Spirit Blue.

Trisulphonic acid. [This is called Triphenyl-p-rosaniline trisulphonic acid ($= C_{37}H_{51}O_{10}N_3S_3$) in the following reference. The dye is usually said to be the hydrochloride, sulphate or acetate of a mixture of triphenyl-p-rosaniline and triphenyl-rosaniline.]

At 90° , $\mu(200) = 1239$, $(1600) = 1486$; **976a**.

Spleen. [The references to this are incomplete.]

Cond.; **156a, 623, 624; 253**.

Stanni- see under **Tin**.**Stanno-** see under **Tin**.**Starch.** $(C_6H_{10}O_5)_x$.

When pure is insol. in aq. The last wash liquor has $\kappa \times 10^6 = 4$; **1209a**. 1% soln., $\kappa \times 10^3$ at $18^\circ = 1.8$; **1160**. 2% soln.

$\alpha \times 10^6$ at $25^\circ = 1.5$; **590**. Increase of cond. during transformation from colloidal to granular form; **595**. Form when in soln.; **260a**.

Cond. with acids; **783a**; qual.; **594**. With bases; **593**, **783a**.

With KI and I; **1160**, **1381**.

Stearic acid. $C_{18}H_{36}O_2 = C_{17}H_{35}.CO_2H$.

Dielectric constant; **1206**.

K.A at 25° , $\Lambda(64) = 68.8$, $(1024) = 110.2$; **945**.

Stearic acid glyceryl ester. (Tristearin).

$C_{57}H_{110}O_6 = (C_{18}H_{35}O_2)_3C_2H_5$.

Effect of temperature on cond.; **106**.

Stilbene disulphonic acid disazophenol mono ethyl ether see **Chrysophenine**.

Storax cinnamic acid see **Cinnamic acid**.

Stovaine see **Methylethyl-dimethylamino-methyl carbinol benzoate**.

Strychnine. $C_{21}H_{22}O_2N_2$.

$k_B \times 10^7$ at $15^\circ = 1.43$ (hydrol.); **1779**, **1776**. At $18^\circ = 8.6$; **1224**.

At $25^\circ = 600$ aq. [apparently erroneous]; **1241**.

Second $k_B \times 10^{11} = 5.95$ (hydrol.); **1776**.

Cond. at 18° , $\mu(4382) = 11.6$, $(\infty) = 195$; **1224**; - **943**. At 25° , $\mu(4906) = 83$, $(\infty) = 190$; **1241**.

In HBr and H_2S , no cond.; **1897**. In HCN; **943**.

B.HCl at 25° , $\Lambda(32) = 79.0$, $(1024) = 91.9$; **270**; - **1224**. - B. HNO_3 ; **1611**. - B. HgI_2 ; **1223**. - B. $(C_2H_4Br)Cl$. - B.EtCl; **270**.

Styphnic acid see **Trinitro-resorcinol**.

Suberane carboxylic acid see **Cycloheptane-carboxylic acid**.

Suberene carboxylic acid see **1-Cycloheptene-1-carboxylic acid**.

Suberic acid. $C_8H_{14}O_4 = CO_2H.(CH_2)_6.CO_2H$.

$k_A \times 10^5$ at $18^\circ = 2.8$ (colorim.); **1563**. At $25^\circ = 2.96$; m. p. 138° ; **279**; **1638**, **1810**; = 2.58; **198**, **1371**; = 3.11; **175**.

Second $k_A \times 10^5 = 2.1$ (inversion); **1335**; = 2.5 (inversion); **1638**; = 1.9 (cond.); = 3.7 (part.); **370**; - **1911**.

At 25° , $\mu(128) = 21$, $(1024) = 56.2$, $(\infty) = 351$; **279**.

Na.A; **370**. - 2Na.A at 25° , $\Lambda(32) = 72.3$, $(1024) = 87.3$; **270**; **370**.

Suberic acid anhydride. $C_8H_{12}O_3$.

Cond. of soln. showing change to acid; **1810**.

Suberic acid mono ethyl ester. $C_{10}H_{18}O_4 = CO_2H.(CH_2)_6.CO_2Et$.

$k_A \times 10^5$ at $25^\circ = 1.46$; m. p. 18° .

$\mu(74.5) = 11.5$, $(1192) = 43.3$, $(\infty) = 351$; **1859**.

Succinamide see **Succinic acid amide**.

Succinanilic acid. (Anilinosuccinic acid).

$C_{10}H_{11}O_3N = CO_2H.C_6H_4.CO.NHPh$.

$k_A \times 10^5$ at $25^\circ = 2.07$; increases on diln.

$\mu(64) = 12.2$, $(1024) = 47.3$, $(\infty) = 350$; **1372**.

Succinicyanamic acid see Succinic acid mono cyanoamide.

Succinicyanoamide see Succinic acid di-cyanoamide.

Succin-dialdehyde. $C_4H_6O_2 = CHO.CH_2.CH_2.CHO$.

$\kappa \times 10^5$ [at 20°?]=1.0; diminishes on standing from polymerization; b. p. 169°–170°; 784.

Succinic acid. $C_4H_4O_4 = CO_2H.CH_2.CH_2.CO_2H$.

$k_A \times 10^5$ at 0°=5.62; 1968a;=5.11 aq.; 1018. At 5.7°=6.15; 1968a. At 17°=6.35 aq.; 164. At 18°=6.9 (colorim.); 1563; 1781. At 21.5°=6.0; 1416. At 25°=6.8; m. p. 180°; 279, 190. The other values vary from 6.3 to 6.9 aq.; – 1184, 1371, 1500b, 1587, 1810, 1968, 1971;=6.65; 1968a; (comparative); 1643. At 35°=6.69; 1968a.

Second $k_A \times 10^4$ =2.2 (part.);=2.7 (cond.); 370;=2.3 (inversion); 1335, 1638;=4 (part.); 1231.

Cond.; 171, 542, 691, 782, 1023, 1122, 1495, 1500b, 1508, 1718; qual.; 865. At 0°; 910. At 0°–35°; 1968, 1968a. At 5°–18°; 1741. At 18° and 52°; 43. At 35°–65°; 388a. At 25°, $\mu(32)$ =16.3, (1024)=83, (∞)=356; 279.

In H_2SO_4 ; 223. In N_2O_4 , no cond.; 602. In Et alc.; 754, 782. In pyridine, fair cond.; 934.

Cond. with boric acid; 1184. With MoO_3 ; 691, 1023, 1495. With KOH; 171. With NaOH; 1508, 1636, 1718. With Na_2WO_4 ; 1023. With acetic acid; 1821. With *iso*-caproic acid; 145b. Under pressure of 1–260 atmospheres; 542.

2(NH_4).A; 145a, 823. – Co.A; 1735. – Mg.A; 1735, 1836. – Ni.A; 1735. – K.A; 164. – 2K.A; 164, 171, 494. – Na.A at 25°, $\Lambda(32)$ =76, (1024)=94; 370; – 43, 1643. – 2Na.A, at 0°; 635. At 25°, $\Lambda(32)$ =81.7, (1024)=98.0; 270, 370; 1508, 1636, 1718. Under pressure of 1–260 atmospheres; 542.

Succinic acid di-amide. (Succinamide).

$C_4H_8O_2N_2 = CONH_2.C_2H_4.CONH_2$.

Hg salt, e. m. f.; 963.

Succinic acid mono cyanoamide. (Succinicyanamic acid).

$C_6H_6O_3N_2 = CO_2H.C_2H_4.CO.NH(CN)$.

$k_A \times 10^4$ at 25°=3.0. $\mu(61.9)$ =45.6, (990.4)=146.4, (∞)=352; 70.

Succinic acid di-cyanodiamide. (Succinicyanoamide).

$C_6H_6O_3N_4 = CO.NH(CN).C_2H_4.CO.NH(CN)$.

$k_A \times 10^5$ at 25°=6.7; diminishes on diln. $\mu(157.5)$ =34.3, (1260)=62.4, (∞)=350; 70.

Succinic acid anhydride. $C_4H_4O_3$.

Cond. of soln. showing change to acid; m. p. 120°; 1500b, 1810, 1838.

Succinic acid mono ethyl ester. $C_6H_{10}O_4 = CO_2H.C_2H_4.CO_2Et$.

$k_A \times 10^5$ at $25^\circ = 3.02$.

$\mu(36.4) = 11.5$, $(582) = 43.5$, $(\infty) = 352$; **1859**.

Succinic acid diethyl ester. $C_8H_{14}O_4 = C_2H_4(CO_2Et)_2$.

In NH_3 , qual.; **606**.

Effect of temperature on cond.; **106**.

Succinic acid mono methyl ester. $C_6H_8O_4 = CO_2H.C_2H_4.CO_2Me$.

$k_A \times 10^5$ at $25^\circ = 3.2$; m. p. 58° ; **244**, **1859**.

$\mu(38.8) = 12.4$, $(620.8) = 46.9$, $(\infty) = 354$; **1859**.

iso-Succinic acid. (Ethylidenesuccinic acid. Methylmalonic acid)

$C_4H_6O_4 = Me.CH(CO_2H)_2$.

$k_A \times 10^4$ at $25^\circ = 8.6$; diminishes on diln.; m. p. 128° ; **1838**, **1371**.

Second $k_A \times 10^7 = 7.6$ (inversion); **1638**.

At 25° , $\mu(32) = 54.4$, $(512) = 168.9$, $(\infty) = 357$; **1838**.

iso-Succinic acid mono ethyl ester. $C_6H_{10}O_4 = Me.CH(CO_2H)(CO_2Et)$.

$k_A \times 10^4$ at $25^\circ = 3.9$; diminishes on diln.

$\mu(34) = 38.3$, $(544) = 127.8$, $(\infty) = 352$; **1859**.

iso-Succinic acid diethyl ester. $C_8H_{14}O_4$.

Relative strength (inversion); **1764**.

Succinic nitrile see **Ethylene cyanide**.

Succinimide. $C_4H_5O_2N$.

$k_A \times 10^{11}$ at $25^\circ = 3.0$ (catal.); **1996**. - **1838**.

Cond. at 25° , $\mu(32) = 0.4$; **1097**, **1838**; qual.; **70**.

In NH_3 , qual.; **606**.

Cond. with inorg. salts; **149**, **1097**. With organic compounds; **1096**.

Cu.2A; **1085**. - **Hg.A**; **1094**, **1097**. In NH_3 ; **610**. E. m. f.; **149**,

963. - **K.A** with inorg. salts, e. m. f.; **149**. - **Ag.A**; **1096**.

- **Na.A** at 25° , $\mu(32) = 74.8$, $(1024) = 95.4$; **1838**. - Complex salts; **1097**, **1750**, **1752**, **1755**.

Succinthionuric acid see **Thiosuccinuric acid**.

Succintoluidic acid see **Tolylsuccinamic acid**.

Succinuric acid. $C_6H_8O_4N_2 = CO_2H.C_2H_4.CO.NH(CONH_2)$.

$k_A \times 10^5$ at $25^\circ = 3.1$.

$\Lambda(64) = 15.2$, $(1024) = 57.4$, $(\infty) = 352$; **1372**.

Na.A at 25° , $\Lambda(32) = 63.2$, $(1024) = 73.1$; **1368a**.

Sucrose see **Saccharose**.

Sulphamide see **Sulphuric acid di-amide**.

o-Sulphaminebenzoic acid. $C_7H_7O_4NS = CO_2H.C_6H_4.SO_2NH_2$.

$k_A \times 10^3$ at $25^\circ = 2.3$; m. p. 152° ; **1981**; $= 2.1$; **781**.

$\Lambda(25) = 76$, $(800) = 251.1$, $(\infty) = 360$; **1981**. - **781**.

p-Sulphaminebenzoic acid. $C_7H_7O_4NS$.

$k_A \times 10^4$ at $25^\circ = 2.6$.

$\Delta(160)=64.4$, $(1280)=149.1$.

Na.A at 25° , $\Delta(32)=62.5$, $(1024)=72.5$; **781**.

Sulphaminobarbituric acid see **Thionuric acid**.

Sulphanilic acid see **p-Aniline sulphonic acid**.

Sulphimide see **Trisulphimide**.

o-Sulphobenzoic acid amide. (o-Carbaminebenzene sulphonic acid).

$C_7H_7O_4NS=CONH_2.C_6H_4.SO_3H$.

At 25° , $\Delta(50)=317$, $(100)=326.5$, $(\infty)=361$; m. p. $193^\circ-194^\circ$ (uncor.).

Na.A at 25° , $\Delta(20)=69.1$, $(40)=72.8$; **1981**.

m-Sulphobenzoic acid. $C_7H_5O_6S=CO_2H.C_6H_4.SO_3H$.

$k_A \times 10$ at $25^\circ=4?$. $\mu(22.6)=343.9$, $(\infty)=377$; **1909**.

m-Sulphobenzoic acid α -mono methyl ester. (Sulphonic ester).

$C_8H_8O_6S=CO_2H.C_6H_4.SO_3Me$.

$k_A \times 10^4$ at $25^\circ=6.8$; extrapolated, because of saponification; m. p. $134^\circ-136^\circ$.

$\Delta(651)=198.6$ at once, $=239.7$ after 225 minutes, $(\infty)=375$; **1909**.

m-Sulphobenzoic acid β -mono methyl ester. (Carboxylic ester).

$C_8H_8O_6S=CO_2Me.C_6H_4.SO_3H$.

$k_A \times 10$ at $25^\circ=2?$; m. p. $56^\circ-62^\circ$. $\Delta(43.2)=341.8$, $(1397)=373.2$, $(\infty)=375$; **1909**.

Sulphocyanic acid see **Thiocyanic acid**.

iso-Sulphocyanic acid. See the thiocarbimides; e. g. allyl thiocarbimide etc.

Sulphonediacetic acid. $C_4H_6O_6S=SO_2(CH_2CO_2H)_2$.

$k_A \times 10^2$ at $25^\circ=1.30$; **1133**.

Second $k_A \times 10^4=4.8$ (cond.); **1911**.

At 25° , $\mu(32)=168$, $(256)=328$, $(\infty)=358$; **1133**.

α -Sulphonedipropionic acid. $C_6H_{10}O_6S=SO_2(CHMe.CO_2H)_2$.

$k_A \times 10^2$ at $25^\circ=1.03$; **1133**.

Second $k_A \times 10^4=3.6$ (cond.); **1911**.

At 25° , $\mu(32)=155.6$, $(256)=304$, $(\infty)=355$; **1133**.

β -Sulphonedipropionic acid. $C_6H_{10}O_6S=SO_2(CH_2.CH_2.CO_2H)_2$.

$k_A \times 10^4$ at $25^\circ=2.4$.

$\mu(128)=58$, $(256)=77.3$, $(1024)=139.2$, $(\infty)=355$; **1133**.

α -Sulphonopropionicacetic acid.

$C_5H_8O_6S=CO_2H.CH_2.SO_2.CHMe.CO_2H$.

$k_A \times 10^2$ at $25^\circ=1.2$; **1133**.

Second $k_A \times 10^4=4.5$ (cond.); **1911**.

At 25° , $\mu(32)=163.3$, $(256)=321.3$, $(\infty)=356$; **1133**.

β -Sulphonopropionicacetic acid.

$C_5H_8O_6S=CO_2H.CH_2.SO_2.(CH_2)_2.CO_2H$.

$k_A \times 10^2$ at $25^\circ=5.1$.

$\mu(32)=117.2$, $(256)=235.8$, $(\infty)=356$; **1133**.

5-Sulphosalicylic acid. (2-Hydroxy-5-sulphobenzoic acid).

$C_7H_6O_6S = HSO_3.C_6H_4(OH).CO_2H$. [$CO_2H=1$; $OH=2$; $SO_3H=5$.]

Cond. alone and with NaOH; m. p. 120°; **1508, 1718**.

Sulphuric acid. H_2SO_4 . [The references to this are incomplete.]

v	(16)	(64)	(256)	(512)	(1024)
At 0°, $\Delta=187.0$	213.6	239.8	253.2	260.3	
At 15°, $\Delta=237.0$	270.9	304.7	335.8	343.0	
At 25°, $\Delta=261.2$	310.6	359.8	371.5	376.2	

In reciprocal ohms. (Tower, Conductivity of Liquids.)

Sulphuric acid di-amide. (Sulphamide). $O_2S(NH_2)_2$. [The references to this are incomplete.]

No cond. in aq. soln.; m. p. 91.5°; **761**.

In NH_3 ; **610**.

Sulphuric acid mono iso-butyl ester. (iso-Butyl sulphuric acid).

$C_4H_{10}O_4S = O_2S(OC_4H_9)(OH)$.

At 25°, $\mu(32)=328.4$, (1024)=354.8.

Na.A at 25°, $\mu(32)=67.2$, (1024)=79.1; **1366**.

Sulphuric acid mono ethyl ester. (Ethyl sulphuric acid).

$C_2H_6O_4S = O_2S(OEt)(OH)$.

At 25°, $\mu(32)=340.9$, (1024)=367.4; **1366**.

Ag.A; **1111**. - Na.A at 25°, $\mu(32)=77.2$, (1024)=87.5; **1366**.

In NH_3 , qual.; **606**.

Sulphuric acid diethyl ester. (Diethyl sulphate).

$C_4H_{10}O_4S = O_2S(OEt)_2$.

$\kappa \times 10^7$ at 0°=1.64. At 25°=2.63; b. p. 110°-111° @ 25 mm.

Cond. as solvent of NEt_4I ; **1844**.

Sulphuric acid mono methyl ester. (Methyl sulphuric acid).

$CH_4O_4S = O_2S(OMe)(OH)$.

At 25°, $\mu(32)=345.0$, (1024)=368.1; **1366**. Comparative strength (colorim.); **1643**.

Na.A at 25°, $\mu(32)=79.6$, (1024)=91.4; **1366**.

Sulphuric acid dimethyl ester. (Dimethyl sulphate).

$C_2H_6O_4S = O_2S(OMe)_2$.

$\kappa \times 10^7$ at 0°=1.644; **1844**. At 20°=10.0; **1843**. At 25°=3.085; **1844**; - **1834, 1643, 1569**.

In H_2SO_4 , qual.; **750**.

Cond. as solvent; **1569, 1834, 1844**.

Sulphuric acid propyl ester. (Propyl sulphuric acid).

$C_3H_8O_4S = O_2S(OPr)(OH)$.

At 25°, $\mu(32)=333.8$, (1024)=359.9.

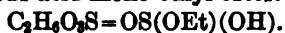
Na.A at 25°, $\mu(32)=71.0$, (1024)=83.0; **1366**.

Sulphurous acid. H_2SO_3 . [The references to this are incomplete.]

$k_A \times 10^3$ at $25^\circ = 1.6$; **460**; -1.74 (cond.); -1.64 (hydrol.); **960**.

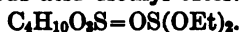
$\mu(20.1) = 169.5$, $(40.0) = 207.6$, $(79.3) = 244.5$, $(\infty) = 390$; **960**.

Sulphurous acid mono ethyl ester. (Ethyl sulphurous acid).



Na.A at 25° , $\mu(32) = 79.7$, $(1024) = 105.4$; **1523**.

Sulphurous acid diethyl ester. (Diethyl sulphite).

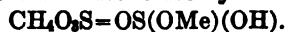


$\kappa \times 10^7$ at $0^\circ = 2.06$. At $25^\circ = 3.46$; b. p. 158.5° @ 750 mm.

Cond. as solvent; **1844**.

asym.-Sulphurous acid diethyl ester see Ethyl sulphonic acid ethyl ester.

Sulphurous acid mono methyl ester. (Methyl sulphurous acid).



Na.A at 25° , $\mu(32) = 78.9$, $(1024) = 115.5$; **1523**.

Sun spurge see *Euphorbia helioscopia*.

Sweat. [The references to this are incomplete.]

Cond.; **1713**.

Concentration of H and OH ions; **587**.

T.

Tannic acid. (Gallotannic acid. Leucotannic acid. Often called tannin). $C_{41}H_{32}O_{26}$? $C_{14}H_{12}O_9$? See also Digallic acid and Tannin. The formula and structure are in doubt. Fischer, Freudenberg, Ber. Deutsch. Chem. Ges. 45, 915, 2709, (1912) have made a synthetic pentagalloyl-glucose [called by them pentadigalloyl-glucose in some places] $C_{41}H_{32}O_{26} = C_6H_7O_6[C_6H_3(OH)_3CO]_5$ which gives the reactions of purified tannin (=tannic acid). Nierenstein, Ber. Deutsch. Chem. Ges. 43, 628, (1910) finds that the formula is $C_{14}H_{12}O_9 = (OH)_3C_6H_3.CHOH.O.C_6H_3(OH)_3.CO_2H$. Paniker, Stiasny, Jour. Chem. Soc. 99, 1819, (1911) show by partition measurements the probable presence of a carboxyl group. The purity of the preparations used in making the following measurements is rather doubtful under the circumstances. It is probable that tannins from various sources will be found to contain isomeric or homologous tannic acids, instead of all containing one acid.

$k_A \times 10^6$ at $25^\circ = 1$. $\mu(32) = 2$, $(128) = 3$, $(\infty) = 350$; **1825**.

At 18° , $\kappa \times 10^5$ of 1% soln. $= 8.97$; after boiling 12 hours $= 14.97$; Nierenstein, Manning, (Private communication). Also; **1160**.

In HBr, no cond.; **30**. In NH_3 , qual.; **606**.

Cond. with iodine; **1160**.

Tannin. See also Digallic acid and Tannic acid.

This is a mixture.

In the literature up to within a few years, the word tannin is used very loosely. In general it means a more or less well purified mixture of acids, chiefly tannic and digallic acids.

At 18°, $\kappa \times 10^4$ of a 1% soln. = 1.1, after heating for some time near 60°.

Cond. with iodine; 1160.

d-Tartaric acid. $C_4H_6O_6 = CO_2H.CHOH.CHOH.CO_2H$.

$k_A \times 10^4$ at 0° = 5; 910. At 17° = 10.1 aq.; 164. At 18° = 11 (colorim.); 1562, 1563. At 25° = 9.7; m. p. 170°; 200, 692, 1182, 1372, 1824, 1838; - relative value; 1643, 1781, 1866.

Second $k_A \times 10^5 = 5.9$ (inversion); 1638; = 3.4 (part.); 1231; = 4.5 (cond.); 1911; - (part.); 1866.

Cond. at 0°; 910. At 17°; 170. At 18°; 377, 1122, 1554. At 20°; 1463. At 25°; 372, 691, 692, 1495, 1518, 1554, 1648, 1747. $\mu(32) = 57.9$, (1024) = 232, (∞) = 357; 1838. At 37°; 309. At 0°-42°; 179.

In HBr and HCl, no cond.; 30. In HCN, small cond.; 943. In H_2SO_4 ; 223. In NH_3 , qual.; 606. In pyridine, fair cond.; 934.

Cond. with inorg. acids and bases; 170, 691, 1182, 1189, 1495, 1518. With inorg. salts; 378, 1463, 1648, 1554, 1994. With organic compounds; 45, 377, 378, 1223, 1747. Under pressure of 1-500 atmospheres; 220.

Ba.A; 1735. - 2Ce.3A; 1496. - Co.A; 1734, 1735. - 2La.3A; 1496. - Pb.A; 938. - Mg.A; 1735, 1836. - Mn.A; 1735. - Ni.A; 1734, 1735. - K.A at 25°, $\mu(32) = 95.0$, (1024) = 155.6; 1838; 200, 1199. - 2K.A; 164, 170, 495, 588, 1468, 1519, 1734. - KSb.A; 160, 705, 1468. - 2Rb.A; 1492. - Na.A at 25°, $\mu(32) = 73$, (1024) = 132; 1838; 1648. Relative strength; 1643. - 2Na.A at 25°, $\mu(32) = 82$, (1024) = 101; 1838; 179, 377, 378, 449, 1199, 1367. Under pressure of 1-500 atmospheres; 220. - $NaNH_4.A$; 179. - $UO_2.A$; 449. - Complex salts; 692, 938, 1519, 1521, 1648, 1734.

d-Tartaric acid diethyl ester. $C_8H_{14}O_6$.

In NH_3 , qual.; 606.

Tartaric acid mono methyl ester. (Methyltartaric acid).

$C_5H_8O_6 = CO_2H.CHOH.CHOH.CO_2Me$.

$k_A \times 10^4$ at 25° = 4.6; diminishes on diln.; m. p. 69°-70°.

$\mu(32) = 39.9$, (1024) = 163, (∞) = 350; 1838.

l-Tartaric acid. $C_4H_6O_6 = CO_2H.CHOH.CHOH.CO_2H$.

$k_A \times 10^4$ at 25° = 9.7; m. p. 170°; 200, 1372, 1824, 1838.

Second $k_A \times 10^5 = 4.2$ (cond.); 1911.

- Cond.; **309**. At 25° , $\mu(32)=57.9$, $(1024)=232$, $(\infty)=357$; **1838**.
 K.A at 25° , $\mu(32)=95.2$, $(1024)=155.4$; **1838**; **200**.
- inact.-Tartaric acid.* (*meso-* or *anti*-Tartaric acid). $C_4H_6O_6$.
 $k_A \times 10^4$ at $17^{\circ}=5.82$ aq.; **164**. At $25^{\circ}=6.0$; m. p. 140° – 143° ;
200, **1824**, **1838**.
 Cond.; **170**, **309**. At 25° , $\mu(32)=46$, $(1024)=190.4$, $(\infty)=357$;
1838.
 Cond. with KOH; **170**.
 K.A at 25° , $\mu(32)=89.3$, $(1024)=128.2$; **1838**; **200**.
- para-Tartaric acid.* (Racemic acid). $C_4H_6O_6$.
 $k_A \times 10^4$ at $0^{\circ}=9.1$. At $12^{\circ}=9.9$; **1968a**. At $17^{\circ}=10.1$ aq.; **164**.
 At $25^{\circ}=9.7$; m. p. 205° – 206° ; **200**, **1372**, **1824**, **1838**;=
 10.8; **1968a**. At $35^{\circ}=11.2$; **1968a**.
 Second $k_A \times 10^6=4.0$ (cond.); **1911**.
 Cond.; **170**, **309**, **692**. At 0° – 35° ; **911**, **1968a**. At 0° – 42° ; **179**.
 At 25° , $\mu(32)=57.9$, $(1024)=231.9$, $(\infty)=357$; **1838**.
 In HBr and HCl, no cond.; **30**.
 Cond. with KOH; **170**. With Na_2WO_3 ; **692**.
 K.A at 25° , $\mu(32)=95.2$, $(1024)=155.0$; **1838**; **200**. – 2K.A; **164**.
 – Na.A at 25° , $\mu(32)=73$, $(1024)=132$; **1838**. – 2Na.A at
 25° , $\mu(32)=82$, $(1024)=101$; **1838**; **179**. – $NaNH_4.A$; **179**.
 Complex salt; **692**.
- Tartronic acid.** (Hydroxy-malonic acid).
 $C_3H_4O_5=CO_2H.CHOH.CO_2H$.
 $k_A \times 10^8$ at $25^{\circ}=5$; m. p. 158° – 159° ; **1629**;=1.07; **1372**. [There
 is no way of determining why these values are so far apart.
 It is probable that this acid is stronger than malonic acid,
 $k \times 10^8=1.6$.]
 At 25° , $\mu(44.3)=132$, $(88.6)=167.5$, $(\infty)=358$; **1629**. $\mu(32)=$
 60.2 , $(1024)=234.2$, $(\infty)=357$; **1372**.
 Cond. increased by boric acid; **1186**.
 Co.A.– Mg.A at 25° , $\mu(32)=51.5$, $(1024)=123.0$. – Ni.A; **1735**.
 – 2K.A; **495**.
- Taurine.** (Aminoisethionic acid). $C_2H_7O_3NS=NH_2.CH_2.CH_2.SO_3H$.
 $k_A \times 10^8$ at $25^{\circ}=1.6$ (hydrol.).
 k_B at 25° is between that of aspartic acid and of hippuric acid.
 Na.A at 25° , $\Lambda(64)=72.9$, $(1024)=80.4$; $M(64)=76.2$, $(1024)=$
 87.5 . – B.HCl at 25° , $\Lambda(64)=373$, $(1024)=386$; **1984**.
- Tears.** [The references to this subject are incomplete.]
 Concentration of H and OH ions; **587**.
- Tellurium** see Triethyl tellurium chloride, Trimethyl tellurium
 chloride and the following compound.
- Tellurium complex oxalate**; **1530a**.

- Teraconic acid.** $C_7H_{10}O_4 = CO_2H.CH_2.C(CMe_2)CO_2H$.
 $k_A \times 10^4$ at $25^\circ = 1.40$ aq.; increases, then diminishes on diln.;
 m. p. $161^\circ - 163^\circ$.
 Second $k_A \times 10^7 = 4.6$ (inversion).
 At 25° , $\mu(49.6) = 28.2$, $(794.2) = 97.8$, $(\infty) = 352$; **1638**.
- Terebic acid.** (Diaterebic acid anhydride). $C_7H_{10}O_4$.
 $k_A \times 10^4$ at $25^\circ = 2.65$; diminishes on diln.
 $\mu(32) = 31$, $(1024) = 138.8$, $(\infty) = 352$; **1372**.
- Terephthalic acid** see **p-Phthalic acid**.
- Terpylonic acid.** $C_9H_{14}O_6$.
 $k_A \times 10^4$ at $25^\circ = 1.05$; m. p. 135° .
 $\mu(32) = 19.9$, $(1024) = 97$, $(\infty) = 352$; **1597**.
- Tetraaspartic acid.** $C_{16}H_{32}O_{12}N_4$.
 4K.A. - 4Na.A at 28° , $\mu(32) = 65.9$, $(1024) = 76.8$. Cond. with
 NaOH and NaCl; **1227**.
- Tetrabenzyl phosphonium hydroxide.** $C_{28}H_{30}OP$.
 B.Cl = $(PhCH_2)_4P.Cl$, at 25° , $\Delta(512) = 88.1$, $(1024) = 89.6$; **270**.
- Tetrabromo-fluorescein.** (Eosin. Tetrabromo-fluoresceinic acid
 anhydride). $C_{20}H_8O_5Br_4$.
 [The 2K and 2Na salts are also called Eosin.]
 Effect of light on cond.; **325, 833, 1321, 1476**. Effect of Röntgen
 rays on cond.; - **1476**. 2Na salt, effect of light on cond.;
1471a.
- Tetrabromo fluoresceinic acid anhydride** see **Tetrabromo-fluorescein**.
- Tetrabromo-phenolphthalein.** $C_{20}H_{10}O_4Br_4$.
 Cond. with NaOH; **1250, 1251**.
- Tetracarboxylic acid** see **Butanetetracarboxylic acid**.
- Tetrachloro-diketo-pentamethylene-hydroxy-carboxylic acid.**
 $C_6H_2O_5Cl_4$.
 [At 25°] $\Delta(23.3) = 388.4$; m. p. 217° ; **729, 728**.
- Tetrachloro-ethane.** (Acetylene tetrachloride).
 $C_2H_2Cl_4 = CHCl_2.CHCl_2$.
 With perchloric acid, no cond.; b. p. 144° @ 720 mm. As sol-
 vent; **840**.
- Tetrachloro-gallein.** $C_{20}H_8O_7Cl_4$; formerly given as $C_{20}H_6O_7Cl_4$.
 In $MeNH_2$, poor cond.; **637**.
- Tetrachloro-methane.** (Carbon tetrachloride). CCl_4 .
 $\alpha \times 10^3$ at 25° is less than 2; b. p. $75.2^\circ - 75.7^\circ$ @ 740.4 mm.;
1388; 386, 715, 872.
 Cond. with carbon disulphide and hexane; **386**. Effect of radium
 on cond.; **872**. With inorg. and organic compounds; **1388**.
 As solvent; (293), **1388**.
- Tetrachloro-quinone** see **Chloroanil**.

Tetraethyl ammonium hydroxide. $C_8H_{21}ON = Et_4N.OH$.

[At 25°] $\Lambda(32) = 79.6$, $(1024) = 182.6$; aq. used for soln. was not pure; 1863.

In Me alc.; 335.

Relative strength; 409.

B.Br(=NEt₄Br). In PBr₃, no cond.; 1833. In acetonitrile; 1844. In Me alc.; 335. - B.Cl(=NEt₄Cl) at 25°, $\Lambda(32) = 88.2$, $(1024) = 99.5$; 270. In epichlorohydrin; 1844. In Me alc.; 335. - B.I(=NEt₄I) at 0°, $\Lambda(32) = 47.7$, $(1024) = 54.8$; 1826. At 25°, $\Lambda(32) = 86.8$, $(1024) = 104.0$; 335; 923, 1423a, 2029. In inorg. solvents; - in bases; 1828; - in bromides, chlorides and oxychlorides; 1833, 1834; - in esters; 1834, 1844, 1847; - in oxides, as SO₂; 1826, 1833, 1855. In organic solvents; - in acids; 1844; - in acid chlorides, etc.; 1844; - in alcohols; 335, 923, 1423a, 1590a, 1844, 1848, 1849, 1853a, 2029; - in aldehydes; 1590a, 1844, 1847, 1849, 1853a; - in amides; 1844; - in anhydrides; 1590a, 1844; - in bases; 1844; - in esters; 1834, 1844, 1847, 1853a; - in hydrocarbons and nitrohydrocarbons; 923, 1423a, 1590a, 1844, 1848, 1853a; - in ketones; 336, 1423a, 1590a, 1844, 1847; - in nitriles; 1423a, 1590a, 1844, 1847, 1848, 1849, 1853a; - in oximes; 1844; - in thiocarbimides, thiocyanates, mercaptans, etc.; 1844, 1846, 1847, 1849, 1853a. - Under pressure, in organic solvents; 1590a.

Tetraethyl arsonium hydroxide. $C_8H_{21}OAs$.

B.Cl(=Et₄As.Cl) at 25°, $\Lambda(32) = 85.5$, $(1024) = 97.5$; 270.

Tetraethyl-diamino-triphenyl carbinol see Brilliant Green.

Tetraethyl-dichloro-quinone diamalonate see Dichloroquinone-diamalonate.

Tetraethyl phosphonium hydroxide. $C_8H_{21}OP$.

B.Cl(=Et₄P.Cl) at 25°, $\Lambda(32) = 86.2$, $(1024) = 98.3$; 270.

Tetraethyl stibonium hydroxide. $C_8H_{21}OSb$.

B.Cl(=Et₄Sb.Cl) at 25°, $\Lambda(32) = 83.3$, $(1024) = 95.1$; 270.

Tetraethyl-succinic acid. $C_{12}H_{22}O_4 = CO_2H.CEt_2.CEt_2.CO_2H$.

$k_A \times 10^4$ at 25° is about 4; m. p. 149°.

$\mu(889) = 171$, $(\infty) = 373$. These values are only approximate; 1888.

Tetraethyl-succinic acid mono methyl ester.

$C_{13}H_{24}O_4 = CO_2H.CEt_2.CEt_2.CO_2Me$.

Too insol. in aq. to get good values of k ; 1888.

Tetrafluoro-diethyl amine. $C_4H_7NF_4 = (CHF_2CH_2)_2NH$.

$k_B \times 10^{10}$ [at 25°] = 1.51 (hydrol.); b. p. 124.4° (cor.) @ 755 mm. [At 25°], $\mu(16) = 0.12$.

B.HCl [at 25°], $\mu(32) = 108.6$, $(1024) = 182.9$; 1697.

Tetrafluoro-diethyl phosphoric acid see **Phosphoric acid tetrafluoro-diethyl ester**.

Tetrafluoro-triethyl amine. $C_6H_{11}NF_4 = (CHF_2CH_2)_3NEt$.

Base has b. p. 137° @ 754 mm. No good values for cond. can be obtained.

B.HCl [at 25°], $\mu(32) = 133.9$, $(1024) = 302.1$; **1698**.

Δ^1 -Tetrahydro-benzoic acid. $C_7H_{10}O_2 = C_6H_9.CO_2H$.

a) Liquid phase, b. p. 240° – 243° ; $k_A \times 10^5 = 2.14$; diminishes on diln. $\Lambda(32) = 9.2$, $(1024) = 40.7$, $(\infty) = 350$.

b) Solid phase, m. p. 29° ; $k_A \times 10^5 = 2.22$; diminishes on diln. $\Lambda(32) = 9.4$, $(1024) = 45$, $(\infty) = 350$; **52**.

Δ^2 -Tetrahydro-benzoic acid. $C_7H_{10}O_2$.

$k_A \times 10^5 = 3.05$; diminishes on diln. $\Lambda(32) = 11$, $(1024) = 50.5$, $(\infty) = 350$; b. p. 234° – 235° ; **52**.

Ar- α -Tetrahydro-naphthoic acid. $C_{11}H_{12}O_2 = C_{10}H_{11}.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 4.45$; m. p. 85° ; **175**; **71**.

$\Lambda(112.6) = 23.9$, $(900.8) = 63.4$, $(\infty) = 350$; **175**.

β -Tetrahydro-naphthoic acid. $C_{11}H_{12}O_2$.

$k_A \times 10^5$ at $25^\circ = 2.5$; m. p. 96° ; **70**, **71**.

$\Lambda(205.8) = 23.9$, $(823.2) = 47$, $(\infty) = 350$; **70**.

trans- Δ^1 -Tetrahydro-o-phthalic acid. $C_8H_{10}O_4 = C_6H_8(CO_2H)_2$.

$k_A \times 10^4$ [at 25°] = 5.9; m. p. 120° ; **72**.

Δ^2 -Tetrahydro-o-phthalic acid. $C_8H_{10}O_4$.

$k_A \times 10^5$ at $25^\circ = 7.59$; diminishes on diln.; m. p. 215° ; **1638**; **72**.

Second $k_A \times 10^7 = 3.2$ (inversion); **1638**.

At 25° , $\mu(64) = 23.7$, $(1024) = 84$, $(\infty) = 352$; **1638**.

Δ^3 -Tetrahydro-o-phthalic acid. $C_8H_{10}O_4$.

$k_A \times 10^4$ at $25^\circ = 5.85$ aq.; increases, then diminishes on diln.; from cond. of soln. of the anhydride (m. p. 70°).

At 25° , $\mu(32) = 47.7$, $(1024) = 195.9$, $(\infty) = [377]$; **1**.

Δ^3 -Tetrahydro-o-phthalic acid anhydride. $C_8H_8O_3$.

Cond. of soln. in aq., see the acid; **1**.

cis- Δ^4 -Tetrahydro-o-phthalic acid. $C_8H_{10}O_4 = C_6H_8(CO_2H)_2$.

$k_A \times 10^5$ [at 25°] = 6.2; **7**.

trans- Δ^4 -Tetrahydro-o-phthalic acid. $C_8H_{10}O_4$.

$k_A \times 10^4$ [at 25°] = 1.18; m. p. 218° ; **72**; = 1.30; **7**. [No measurements of cond. are given in either of these articles.]

Δ^1 -Tetrahydro-p-phthalic acid. $C_8H_{10}O_4$.

$k_A \times 10^5$ at $25^\circ = 5.0$ aq.; m. p. above 300° .

Second $k_A \times 10^6 = 2.8$ (inversion).

At 25° , $\mu(321) = 41.9$, $(1284) = 78.8$, $(\infty) = 352$; **1638**.

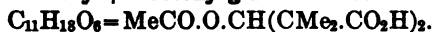
Tetrahydro- α -thiophenecarboxylic acid. $C_6H_8O_2S = C_4H_7S.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.15$; increases on diln.

$\Lambda(35.4) = 22.1$, $(566.4) = 81$, $(\infty) = 359$; **70**.

1,2,5,8-Tetrahydroxy-anthraquinone see Quinalizarine.

sym.-Tetramethyl- β -acetoxy-glutaric acid.



$k_A \times 10^5$ at $25^\circ = 5.3$; increases, then diminishes on diln.; m. p. 158° – 159° .

$\mu(38.4) = 14.9$, $(613.8) = 55.7$, $(\infty) = 349$; **1261**.

Tetramethyl ammonium hydroxide. $\text{C}_4\text{H}_{12}\text{ON} = \text{Me}_4\text{N.OH}$.

At 25° , $\Lambda(16) = 205$, $(64) = 211$, $(\infty) = 211$; **271**.

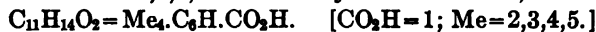
B.Br(= $\text{Me}_4\text{N.Br}$); **2029**. In HBr ; **1646**. In PBr_3 , no cond.; **1833**. In SO_2 ; **485**, **1855**. In Me alc. ; **2029**. In epichlorohydrin; **1844**. – **B.Cl**(= $\text{Me}_4\text{N.Cl}$) at 25° , $\Lambda(32) = 99.1$, $(1024) = 111.4$; **270**. In HBr ; **1646**; qual.; **1645**. In H_2S ; **1646**. In NH_4OH ; **650**. In SO_2 ; **1855**. In epichlorohydrin; **1844**. – **B.I**(= $\text{Me}_4\text{N.I}$) at 0° , $\Lambda(32) = 54.8$, $(1024) = 62.6$; **1826**. At 25° , $\Lambda(32) = 103.4$, $(1024) = 123.8$; **822a**, **2029**. In HBr ; **1646**. In H_2S , fair cond.; **27**. In Br , no cond.; **1833**. In SO_2 ; **485**, **1826**, **1855**. In NH_3 , qual.; **606**. In acetone; **336**. In epichlorohydrin; **1844**. In Me alc. ; **335**, **2029**. – **B.Acetate**; **145a**.

Tetramethyl arsonium hydroxide. $\text{C}_4\text{H}_{12}\text{OAs} = \text{Me}_4\text{As.OH}$.

At 25° , $\Lambda(64) = 202$, $(256) = 204$, $(\infty) = 205$; **271**.

B.Cl(= $\text{Me}_4\text{As.Cl}$) at 25° , $\Lambda(32) = 93.6$, $(1024) = 105.5$; **270**.

2,3,4,5-Tetramethyl-benzoic acid. (Prehnitene-carboxylic acid. Prehnitic acid. 1,2,3,4-Tetramethyl-5-benzoic acid).

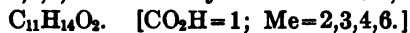


$k_A \times 10^5$ at $25^\circ = 6$.

$\Lambda(2048) = 103.4$, $(\infty) = 351$; **1418**.

2,3,4,6-Tetramethyl-benzoic acid. (*iso*-Durenecarboxylic acid.

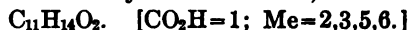
1,2,3,5-Tetramethyl-4-benzoic acid).



$k_A \times 10^4$ at $25^\circ = 1$.

$\Lambda(2048) = 131.5$, $(\infty) = 351$; **1418**.

2,3,5,6-Tetramethyl-benzoic acid. (Durenecarboxylic acid. 1,2,4,5-Tetramethyl-3-benzoic acid).



$k_A \times 10^4$ at $25^\circ = 3$.

$\Lambda(1024) = 146.9$, $(\infty) = 351$; **1418**.

Tetramethyl-diamino-benzophenone. $\text{C}_{17}\text{H}_{20}\text{ON}_2 = \text{CO}(\text{C}_6\text{H}_4\text{NMe}_2)_2$.

In HBr and HI , poor cond. In H_2S , no cond.; **1897**.

aaa'- α' -Tetramethyl-dihydro-muconic acid.



$k_A \times 10^5$ at 25° , for acid, m. p. 68° , $= 1.8$. $\mu(46) = 9.9$, $(184) = 19.5$, $(\infty) = 350$.

$k_A \times 10^5$ at 25° , for acid, m. p. 61° , = 1.83. $\mu(40)$ = 9.3, (160) = 18.5, (∞) = 350; **229**.

Tetramethylene-carboxylic acid. (Cyclobutane-carboxylic acid. Trimethylene-acetic acid). $C_4H_6O_2$.

$k_A \times 10^5$ at 25° = 1.82; b. p. 192° – 197° ; **1414, 1859, 2026**.

At 25° , $\mu(29)$ = 8.1, (928) = 43.3, (∞) = 356; **1859**.

Tetramethylene diamine. $C_4H_{12}N_2 = NH_2(CH_2)_4NH_2$.

$k_B \times 10^4$ at 25° = 5.4 aq.; about 16% too high; **271**.

Cond.; **1354**. At 25° , $\Lambda(32)$ = 24.6, (256) = 59, (∞) = 200; **271**.

B.2HCl at 25° , $\Lambda(32)$ = 108.8, (1024) = 129.9; **270**.

Tetramethylene-1,1-dicarboxylic acid. $C_6H_8O_4$.

$k_A \times 10^4$ at 25° = 8.33; **1414, 1859**; = 8.0; diminishes on diln.; m. p. 158° ; **1638, 1666**.

Second $k_A \times 10^7$ = 3.0 (inversion); **1638**.

At 25° , $\mu(33)$ = 53.8, (1056) = 215.2, (∞) = 353; **1859**.

cis-Tetramethylene-1,2-dicarboxylic acid. (Ethylenesuccinic acid).

$C_6H_8O_4 = CO_2H.C_4H_6.CO_2H$.

$k_A \times 10^5$ [at 25°] = 6.6; m. p. 138° ; **1410**.

trans-Tetramethylene-1,2-dicarboxylic acid. $C_6H_8O_4$.

$k_A \times 10^5$ [at 25°] = 2.8; m. p. 131° ; **1410**.

Tetramethyl-ethylenelactic acid. $C_7H_{14}O_3 = Me_2COH.CMe_2.CO_2H$.

$k_A \times 10^5$ at 25° = 4.34; m. p. 152° – 153° .

$\mu(32.6)$ = 13, (1042.6) = 67, (∞) = 350; **1704**.

sym.-Tetramethyl- β -hydroxy-glutaric acid.

$C_9H_{16}O_5 = CO_2H.CMe_2.CHOH.CMe_2.CO_2H$.

$k_A \times 10^4$ at 25° = 1.35; m. p. 162° – 163° .

$\mu(49.6)$ = 27.6, (1588.2) = 127.4, (∞) = 350; **1261**.

Acetyl derivative see Tetramethyl-acetoxy-glutaric acid.

sym.-Tetramethyl- β -hydroxy-glutaric acid lactone. $C_9H_{14}O_4$.

a) Acid, m. p. 120° – 124° , $k_A \times 10^3$ at 25° = 1.5. $\mu(31.7)$ = 67.1, (542.3) = 203.2, (∞) = 351.

b) Acid, m. p. 140° – 141° , $k_A \times 10^3$ at 25° = 1.3. $\mu(118.3)$ = 111.3, (898.9) = 229.4, (∞) = 351; **1262**.

Tetramethyl phosphonium hydroxide. $C_4H_{12}OP = Me_4P.OH$.

At 25° , $\Lambda(64)$ = 207, (∞) = 207; **271**.

B.Cl (= $Me_4P.Cl$) at 25° , $\Lambda(32)$ = 95.0, (1024) = 107.4; **270**.

Tetramethyl stibonium hydroxide. $C_4H_{12}OSb = Me_4Sb.OH$.

At 25° , $\Lambda(64)$ = 169, (256) = 171, (∞) = 199; **271**.

B.Cl (= $Me_4Sb.Cl$) at 25° , $\Lambda(32)$ = 87.8, (1024) = 99.9; **270**.

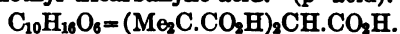
Tetramethyl-succinic acid. $C_8H_{14}O_4 = CO_2H.Me_2C.CMe_2.CO_2H$.

$k_A \times 10^4$ at 25° = 3.11; m. p. 195° ; **280; 175, 202**. At 25° , $\mu(86)$ = 52.6, (688) = 127.7, (∞) = 348; **280**.

2Na.A at 25° , $\mu(32)$ = 77.2, (1024) = 98.1; **175**.

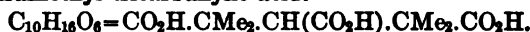
Tetramethyl-succinic acid mono methyl ester.
 $k_A \times 10^5$ at $25^\circ = 1.22$; m. p. 63° .

 $\mu(47.8) = 8.4$, $(382.5) = 23$, $(\infty) = 350$; **244**.
Tetramethyl-thionine hydroxide.
 Free base, (from cond. of B.Cl + NaOH) at 0° , $\mu(512) = 98.8$. At 25° , $\mu(512) = 149.9$; **770**; **741**.

 B.Cl, Methylene Blue, $(=\text{C}_{16}\text{H}_{18}\text{N}_2\text{S}.\text{Cl})$ at 0° ; **770**. At 25° , $\mu(128) = 88.97$, $(1024) = 96.6$; **882**, **1266**; - **770**, **1402**. Cond. with other dyes; **1401**.
 α -Tetramethyl-tricarballic acid. (p- acid).
 $k_A \times 10^5$ at $25^\circ = 9.8$; increases on diln.; m. p. 156° .

 $\mu(32) = 19.1$, $(1024) = 97.6$, $(\infty) = 350$.

 Na salt at 25° , $\mu(32) = 78.3$, $(1024) = 101.3$; **1839**.
 β -Tetramethyl-tricarballic acid. (α - acid). $\text{C}_{10}\text{H}_{16}\text{O}_6$.
 $k_A \times 10^4$ at $25^\circ = 1.11$; increases on diln.; m. p. 133° .

 $\mu(64) = 28.2$, $(1024) = 101.4$, $(\infty) = 350$; **1839**.
 $\alpha\alpha\gamma\gamma$ -Tetramethyl-tricarballic acid.
 $k_A \times 10^4$ at $25^\circ = 1.5$; m. p. 140° .

 $\mu(34.4) = 24.8$, $(275.2) = 66.7$; **813**.
Tetramethyl-urea. $\text{C}_5\text{H}_{12}\text{ON}_2 = \text{OC}(\text{NMe}_2)_2$.
 Cond. with HCl; **781**.
Tetranitro-methane. $\text{CO}_2\text{N}_4 = \text{C}(\text{NO}_2)_4$.
 $\alpha \times 10^5$ at 25° is less than 1; b. p. 125.0° – 125.5° @ 746 mm.; **1843**, **1844**.

 In NH_3 ; **610**.

 Cond. as solvent of organic compounds; **1844**.
Tetrapropyl ammonium hydroxide. $\text{C}_{12}\text{H}_{29}\text{ON}$.
 B.I. = $\text{Pr}_4\text{N}.\text{I}$. In acetone; **1848**, **1853a**. In Et alc.; **1853a**. In epichlorohydrin; **1844**, **1851**. In propionitrile; **1848**.
Tetrazole. CH_2N_4 .
 At 25° , $\mu(32) = 3.9$, $(1024) = 37.9$; **142**, **145**, **1720**.
Tetric acid. (Tetric acid). $\text{C}_5\text{H}_8\text{O}_3$.
 $k_A \times 10^5$ at $25^\circ = 8.2$; diminishes on diln.; m. p. 188° .

 $\mu(32) = 17.9$, $(256) = 47.9$, $(\infty) = 358$; **1823**.

 Na salt at 25° , $\mu(32) = 69.9$, $(1024) = 80.1$; **1823**, **1831**.
Tetric acid see Tetric acid.**Tetrolic acid. $\text{C}_4\text{H}_4\text{O}_2 = \text{MeC}:\text{C}.\text{CO}_2\text{H}$.**
 $k_A \times 10^3$ at $25^\circ = 2.5$; diminishes on diln.

 $\Lambda(32) = 88.6$, $(1024) = 275.8$, $(\infty) = 361$; **1371**.

 Na.A at 25° , $\Lambda(32) = 72.4$, $(1024) = 82.4$; **1368a**.

Thallium.

See the following compound.

Thallium diethyl hydroxide. $C_4H_{11}OTl$.

$B.Cl (= Et_2Tl.Cl)$ at 25° , $\mu(20)=84$, $(1280)=131.3$; **1613**.

Theine. $C_8H_{10}O_4N_4$. [A typographical error for $C_8H_{10}O_2N=Caf$ -
feine?.]

In SO_2 ; **1842**.

Thenoyl- see **Thienyl-**

Theobromine see **3,7-Dimethyl-2,6-dioxy-purine**.

Theophylline see **1,3-Dimethyl-2,6-dioxy-purine**.

Thiazole. C_3H_3NS .

$k_B \times 10^{12}$ at $25^\circ=3.3$ (catal.); **1864** and **1150**; $=2.1$ (catal.);
177.

Cond. with KCl and HCl ; **177**.

$B.HCl$ at 25° , $\Delta(50)=189.8$; **1864**; **177**. - $B.H_2SO_4$; **1864**.

Thiazolemethyl- see **Methylthiazole-**

α -Thienylglyoxylic acid. $C_6H_4O_2S=C_4H_2S.CO.CO_2H$.

$k_A \times 10^3$ at $25^\circ=8$; increases on diln.

$\Delta(32)=274.1$, $(1024)=354$, $(\infty)=357$; **768**.

Thienyl-syn-ketoxime-carboxylic acid. (Thienylglyoxylic acid oxime).

$C_6H_5O_2NS=C_4H_2S.C(NOH).CO_2H$.

$k_A \times 10^3$ at $25^\circ=5$; diminishes on diln.

$\Delta(64)=153.5$, $(1024)=300$, $(\infty)=352$; **768**.

Thienylpyrroacemic acid. $C_8H_5O_4S=C_4H_2S.CO.CH_2.CO.CO_2H$.

$k_A \times 10^3$ at $25^\circ=4.6$ aq.; m. p. 180° .

$\mu(280.5)=234.9$, $(1122)=304.9$, $(\infty)=355$; **23**.

Thioacetic acid. $C_2H_4OS=Me.COSH$.

$\alpha \times 10^6$ at $0^\circ=2.9$. At $25^\circ=2.69$; b. p. $97^\circ-99^\circ$; **1843**, **1844**.

$k_A \times 10^4$ at $25^\circ=4.7$; increases, then diminishes on diln.

$\Delta(32)=42.1$, $(1024)=176.8$, $(\infty)=365$; **1370**.

In SO_2 ; **1842**.

Cond. as solvent of NEt_4I ; **1844**.

$Na.A$ at 25° , $\Delta(32)=78.6$, $(1024)=90.3$; **270**.

Thiobenzoic acid amide. $C_7H_7NS=Ph.CS.NH_2$.

In NH_3 ; **610**.

Cond. with $NaOH$; **781**.

Thiocarbamic acid ethyl ester. (Xanthogen amide).

$C_3H_7ONS=NH_2.CS.OEt$.

In Et alc. at 25° , $\mu(1024)=0.52$.

$CuCl$ salt; **1530**.

Thiocarbamine glycollic acid. $C_3H_5O_2NS=NH_2.CS.CHOH.CO_2H$.

$k_A \times 10^3$ at $25^\circ=1.13$ (cond.); $=1.1$ (catal.).

$\mu(32)=67.1$, $(1024)=197.8$, $(\infty)=382$; **854**.

Thiocarbanilide. (ab-Diphenyl-thio urea). $C_{12}H_{12}N_2S$.

In NH_3 , qual.; 606.

β -Thiocarbonglycollic acid mono ethyl ester.



$k_A \times 10^4$ at $25^\circ = 4.9$.

$\mu(31.6) = 44.4$, $(505.6) = 148.4$, $(\infty) = 378$; 854.

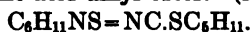
Thiocarbonyl-di-thioglycollic acid see **Trithio-carbondiglycollic acid.**

Thiocyanic acid. (Sulphocyanic acid). $CHNS=NC.SH$.

At 25° , $\Lambda(32) = 358$, $(1024) = 367$, in Hg.U.; aq. used for soln. was not pure; 1362; 1162.

$NH_4.A$; 681, 1276, 1746, 1747. In SO_2 ; 1826, 1855. In NH_3 , qual.; 606. In Et alc.; 491, 1470. In ketones; 474, 482, 487, 1056, 1070, 1106, 1107. In nitriles; 474, 482. In pyridine; 1057. With inorg. salts; 793, 1276. With organic compounds; 1747. - Cr.3A; 1641. - Co.2A; 1526. - Cu.A; 990, 1004. - Pb.2A; 216. - Hg.2A, qual.; 1392. In NH_3 , qual.; 606. - K.A at 0° , $\Lambda(32) = 66.4$, $(128) = 69.4$; 1826. At 25° , $\Lambda(32) = 118.7$, $(1024) = 131.5$; 911; - 468, 681, 793, 820, 922, 1007. In HCN; 943. In SO_2 ; 1826. In NH_3 , qual.; 606. In alcohols; 491, 922, 1470. In ketones; 487, 922, 1056, 1070. In nitriles; 1844. In pyridine; 478, 1057. With inorg. salts; 793. With gelatin; 468. - Ag.A; 216, 217. - Na.A, in alcohols; 471, 491, 1470. In esters; 478. In ketones; 487, 1056, 1070. In nitriles; 1844. In pyridine; 478, 1057. - Tl.A; 216, 1337. - Complex and "Double" salts; 1162, 1163, 1164, 1192, 1526, 1527, 1573, 1641, 1752, 1944, 1947, 1948.

Thiocyanic acid amyl ester. (Amyl thiocyanate).



$\kappa \times 10^6$ at $25^\circ = 1.47$; b. p. $193.5^\circ - 195^\circ$ @ 739.5 mm.

As solvent; 939.

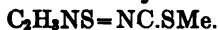
Thiocyanic acid ethyl ester. (Ethyl thiocyanate). $C_3H_5NS=NC.SET$.

$\kappa \times 10^6$ at $0^\circ = 1.45$; 1844. At $25^\circ = 1.23$; 1844; = 2.62; 1843; - 939, 1223.

In NH_3 , qual.; 606.

Cond. with I; 1223. As solvent; 939, 1223, 1844.

Thiocyanic acid methyl ester. (Methyl thiocyanate).



$\kappa \times 10^6$ at $-50^\circ = 0.3$. At $-40^\circ = 0.5$. At $-15^\circ = 0.9$; 1853a.

At $0^\circ = 1.3$; 1853a; = 3.1; 1844; 1847. At $25^\circ = 1.8$; 1853a; = 1.46; 1843; = 4.1; 1844; - 939, 1223, 1846, 1847. At $40^\circ = 6.6$. At $50^\circ = 7.0$; 1844. At $130^\circ = 20.6$; 1846.

Cond. as solvent; 939, 1844, 1646, 1847, 1849, 1853a.

Thiocyanoacetic acid. (Rhodanoacetic acid.)

$k_A \times 10^3$ at $25^\circ = 2.67$; diminishes on diln. from decomposition in soln.

$\Lambda(32) = 91.4$, $(1024) = 277.8$, $(\infty) = 362$; **1370**.

Thiodiglycollic acid. $\text{C}_4\text{H}_6\text{O}_4\text{S}=\text{S}(\text{CH}_2\text{CO}_2\text{H})_2$.

$k_A \times 10^4$ at $25^\circ = 4.8$; **1133**, **1370**.

Second $k_A \times 10^5 = 3.3$ (cond.); **1911**.

At 25° , $\mu(32) = 42$, $(1024) = 183$, $(\infty) = 358$; **1133**. $\mu(1024) = 190$, $(\infty) = 358$; **1370**.

2Na.A at 25° , $\Lambda(32) = 81.2$, $(1024) = 99.0$; **270**.

Thiodihydracrylic acid see β -Thiodilactylic acid.**Thiodilactylglycollic acid** see Thio- α -lactylhydracrylic acid. **α -Thiodilactylic acid.** $\text{C}_6\text{H}_{10}\text{O}_4\text{S}=\text{S}(\text{CH}.\text{Me}.\text{CO}_2\text{H})_2$.

α -modification, $k_A \times 10^4$ at $25^\circ = 4.9$; m. p. 125° .

$\mu(32) = 42.6$, $(1024) = 181$, $(\infty) = 356$.

β -modification, $k_A \times 10^4$ at $25^\circ = 4.4$; m. p. 109° .

$\mu(32) = 40$, $(1024) = 181$, $(\infty) = 356$; **1133**.

 β -Thiodilactylic acid. (Thiodihydracrylic acid).

$k_A \times 10^5$ at $25^\circ = 7.8$.

$\mu(32) = 17.4$, $(1024) = 83.5$, $(\infty) = 356$; **1133**.

Thioformanilide. $\text{C}_7\text{H}_7\text{NS}=\text{CHS}.\text{NHPh}$.

Cond. in NaOH; **538**.

Thioglycolhydracrylic acid. (β -Thiolactylglycollic acid).

$k_A \times 10^4$ at $25^\circ = 2.6$; diminishes on diln.

$\mu(32) = 31.1$, $(1024) = 136.2$, $(\infty) = 357$; **1133**.

Thioglycollic acid. $\text{C}_2\text{H}_4\text{O}_2\text{S}=\text{CH}_2.\text{SH}.\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ = 2.91$ aq.; **972**; $= 2.25$; **1370**.

$\Lambda(50) = 43.7$, $(1000) = 158.8$, $(\infty) = 384$; **972**. $\Lambda(32) = 29.4$, $(1024) = 132.7$, $(\infty) = 360$; **1370**.

Thiohydantoin. (2-Imino-4-keto-tetrahydro-thiazole). $\text{C}_3\text{H}_4\text{ON}_2\text{S}$.

$k_B \times 10^{13}$ at $25^\circ = 9.5$ (catal.); **1864** and **1150**.

B.HCl at 25° , $\Lambda(50) = 233.2$; **1864**.

 α -Thiolactylglycollic acid. $\text{C}_5\text{H}_8\text{O}_4\text{S}=\text{Me}.\text{CH}(\text{CO}_2\text{H}).\text{S}.\text{CH}_2.\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $25^\circ = 4.8$.

$\mu(32) = 41.7$, $(1024) = 179$, $(\infty) = 357$; **1133**.

 β -Thiolactylglycollic acid see Thioglycolhydracrylic acid.**Thio- α -lactylhydracrylic acid.** ($\alpha\beta$ -Thiodilactylglycollic acid.)

$k_A \times 10^4$ at $25^\circ = 2.2$.

$\mu(32) = 28.3$, $(1024) = 135$, $(\infty) = 356$; **1133**.

Thiomalic acid. $C_4H_5O_4S = CO_2H.CH(SH).CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 5.2$; m. p. 150° .

$\mu(32) = 46$, $(1024) = 201$; **1529**.

Thiomethyl- see **Methylthio-**

Thionine. (Lauth's Violet. Phenylene Violet). $C_{12}H_8N_2S$.

Free base, $\Lambda(256) = 17.7$, after 5 minutes standing.

B.HCl at 25° , $\Lambda(128) = 75.7$, $(1024) = 80.9$; **741**.

Thionuric acid. (Sulphaminobarbituric acid). $C_4H_5O_6N_2S$.

$NH_4.A$, in NH_3 , qual.; **606**.

Thioparabanic acid. $C_8H_5O_2N_2S$.

Dissolved in cold aq., $\mu(64) = 2.4$, $(1024) = 5.7$; **1743**.

Thiophene. C_4H_4S .

In HCl and HBr, good cond. In HI and H_2S , no cond.; **1897**.

α -Thiophenecarboxylic acid. [β -acid in **1372**.] $C_6H_4O_2S$.

$k_A \times 10^4$ at $25^\circ = 3.16$; m. p. 126.2° ; **1811**; **70**, **1372**.

$\Lambda(25) = 32.4$, $(800) = 149.3$, $(\infty) = 382.7$; **1811**. $\Lambda(64) = 46.9$,

$(1024) = 150.2$, $(\infty) = 359$; **1372**.

β -Thiophenecarboxylic acid. $C_6H_4O_2S$.

$k_A \times 10^5$ at $25^\circ = 7.8$; m. p. 138.4° ; **1134**, **1811**.

$\Lambda(50) = 23.2$, $(800) = 84.7$, $(\infty) = 382.7$; **1811**.

Thiosuccinuric acid. (Succinthionuric acid).

$C_6H_8O_3N_2S = CO_2H.C_2H_4.CO.NH(CSNH_2)$.

$k_A \times 10^5$ at $25^\circ = 3.37$; increases on diln.

$\Lambda(64) = 15.8$, $(1024) = 59.5$, $(\infty) = 353$; **1372**.

Thiourea. $CH_4N_2S = SC(NH_2)_2$.

$k_B \times 10^{15}$ at $25^\circ = 1.1$ (catal.); **1864** and **1150**. At $60^\circ = 95$ (inversion); **1880** and **1150**.

At 25° , $\mu(32) = 0.06$, $(256) = 0.20$; **1743**. - **1008**.

In HCN, small cond.; **943**.

Cond. with inorg. salts; **149**, **743**, **1008**, **1524**, **1526**.

Cu.2A; **1008**. - B.HCl at 25° , $\mu(50) = 371.0$. - B. H_2SO_4 ; **1864**.

- B.Oxalate; **1743**. - Complex salts; **1008**, **1524**, **1526**, **1530**.

Thorn-apple see **Datura**.

Thymol. (4-*iso*-Propyl-3-hydroxy-toluene).

$C_{10}H_{14}O = (Me)(iso-Pr)C_6H_3.OH$. [Me=1.]

In HBr; **29**, **30**, **147a**. In HCl; **147a**. In H_2S , no cond.; **147a**.

In NH_3 , qual.; **606**. In $MeNH_2$, fair cond.; **637**.

Cond. with NaOH and HCl; **1508**.

p-Thymotic aldehyde. $C_{11}H_{14}O_2 = Me.C_6H_2(iso-Pr)(CHO)(OH)$.

[Me=1; CHO=2; $C_2H_7=4$; OH=5.]

$k_A \times 10^4$ at $25^\circ = 1$; m. p. 133° . $\Lambda(4096) = 164.4$, $(\infty) = 351$; **643**.

Thyroid gland. [The references to this are incomplete.]

Cond.; **156a**.

Tiglic acid. $C_8H_8O_2 = Me.CH:CMc.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 9.57$.

$\Lambda(32) = 6.1$, $(1024) = 33.3$, $(\infty) = 355$; **1371**.

Na.A at 25° , $\Lambda(32) = 66.4$, $(1024) = 75.8$; **1368a**.

Tin.

See the following compounds.

Tin diethyl diiodide. $C_4H_{10}I_2Sn = Et_2SnI_2$.

At 25° , $\mu(128) = 281.0$, $(1024) = 393.1$.

In Me alc.; **2029**.

Tin methyl tribromide. $CH_3Br_3Sn = MeSnBr_3$.

At 25° , $\mu(20) = 756$; m. p. 53° ; **1613**.

Tin triethyl hydroxide. $C_6H_{16}OSn$.

B.I ($= C_6H_{16}ISn = Et_3SnI$), in Me alc.; **2029**.

Tin trimethyl hydroxide. $C_3H_{10}OSn = Me_3Sn.OH$.

$k_B \times 10^7$ at 25° is about 1.7. $\mu(34.6) = 0.49$, $(276.8) = 1.4$, (∞) is about 200; **271**.

p-Tolubenzyl sulphonic acid. (p-Xylene- or p-Xylyl sulphonic acid).

$C_8H_{10}O_3S = Me.C_6H_4.CH_2.SO_3H$. [$CH_3SO_3H = 1$; $Me = 4$.]

$k_A \times 10$ at 25° is about 1. $\Lambda(32) = 334$, $(1024) = 348.8$, $(\infty) = 350$.

Na.A at 25° , $\Lambda(32) = 60.2$, $(1024) = 72.2$; **423**.

Toluene. $C_7H_8 = Me.C_6H_5$.

$\alpha \times 10^8$ at 25° is less than 2; b. p. $108^\circ - 110^\circ @ 744.5$ mm.; **1388**;

– **305, 384, 386, 1010, 1604, 1605**.

In HBr, HI and H_2S , no cond.; **147a, 1897**. In HCl, no cond.;

147a. In NH_3 , qual.; **606**. In $MeNH_2$, no cond.; **637**.

Cond. with salts and organic compounds; **383, 384, 386, 842,**

1314, 1388, 1569. As solvent; **(1314), 1569**.

o-Toluene sulphinic acid. $C_7H_8O_2S = Me.C_6H_4.SO_2H$.

$k_A \times 10^2$ at $25^\circ = 2.2$; diminishes on diln.

$\Lambda(32) = 196.4$, $(1024) = 303$, $(\infty) = 353$; **54**.

p-Toluene sulphinic acid. $C_7H_8O_2S$.

$k_A \times 10^2$ at $18^\circ = 3.1$; **54**. At $25^\circ = 2.3$; **54, 1134**. At $30^\circ = 1.9$; **54**.

At 25° , $\Lambda(32) = 199.1$, $(1024) = 323$, $(\infty) = 353$; **54**. $\Lambda(33) = 207.2$,

$(528) = 320.8$, $(\infty) = 355$; **1134**.

o-Toluenesulphone-aminoacetic acid. (o-Toluenesulphoneglycocollic acid). $C_9H_{11}O_4NS = Me.C_6H_4.SO_2.NH.CH_2.CO_2H$.

$k_A \times 10^4$ [at 25°] = 2.82.

$\Lambda(67.4) = 44.4$, $(1077.6) = 146.6$, $(\infty) = 349$; **1134**.

p-Toluenesulphone-aminoacetic acid. (p-Toluenesulphoneglycocollic acid). $C_9H_{11}O_4NS$.

$k_A \times 10^4$ [at 25°] = 3.47.

$\Lambda(81.7) = 53.9$, $(653.6) = 132.6$, $(\infty) = 349$; **1134**.

p-Toluene sulphonic acid. $C_7H_8O_3S = Me.C_6H_4.SO_3H$.

$k_A \times 10$ at $25^\circ = 2?$; **423, 1940**.

$\Delta(64.4)=366$, $(\infty)=380$; **1940**. $\Delta(32)=336.6$, $(64)=344.6$, $(\infty)=350$; **423**.

In H_2SO_4 ; **157**.

K.A. - Ag.A; **1940**. - Na.A at 25° , $\Delta(32)=61.4$, $(1024)=72.7$; **423**; **1940**.

o-Toluic acid see Phenylacetic acid.

o-Toluic acid. $\text{C}_8\text{H}_8\text{O}_2 = \text{Me.C}_6\text{H}_4.\text{CO}_2\text{H}$.

$k_A \times 10^4$ at $0^\circ=1.59$; **1968a**; $=1.45$ aq.; **515**. At $12^\circ=1.49$; **1968a**. At $18^\circ=1.3$ (colorim.); **1563**. At $20^\circ=1.29$ aq.; **515**. At $25^\circ=1.25$; **515**, **1371**, **1418**; $=1.37$; **1968a**, **1581**. At $30^\circ=1.20$ aq.; **515**. At $35^\circ=1.25$; **1968a**; $=1.17$ aq.; **515**. At $40^\circ=1.11$ aq.; **515**, **1581**. At $45^\circ=1.06$ aq.; **515**. At $50^\circ=1.01$ aq.; **515**, **1581**. At $60^\circ=0.96$ aq. At $70^\circ=0.86$ aq. At $80^\circ=0.77$ aq. At $90^\circ=0.67$ aq. At $99^\circ=0.59$ aq.; **1581**.

Cond. at $0^\circ-35^\circ$; **1968a**. At $0^\circ-50^\circ$; **515**. At $25^\circ-99^\circ$; **1581**. At 25° , $\Delta(128)=41.3$, $(1024)=103.4$, $(\infty)=356$; **1371**. $\Delta(1024)=106.7$, $(\infty)=349$; **1968a**.

In HBr; **30**. In HCl, good cond.; **30**. In NH_3 , qual.; **606**. In N_2O_4 , no cond.; **602**.

Na.A at 25° , $\Delta(32)=66.5$, $(1024)=76.5$; **1368a**. At $0^\circ-35^\circ$; **1968a**. At $0^\circ-50^\circ$; **515**. At $25^\circ-99^\circ$; **1581**.

m-Toluic acid. $\text{C}_8\text{H}_8\text{O}_2 = \text{Me.C}_6\text{H}_4.\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $0^\circ=5.15$. At $12^\circ=5.48$; **1968a**. At $18^\circ=5.9$ (colorim.) **1563**. At $25^\circ=5.2$; **1371**, **1418**; $=5.60$; **1968a**; $=5.8$ aq.; **1581**. At $35^\circ=5.54$; **1968a**. At $40^\circ=5.8$ aq. At $50^\circ=5.5$ aq. At $60^\circ=5.3$ aq. At $70^\circ=5.0$ aq. At $80^\circ=4.7$ aq. At $90^\circ=4.4$ aq. At $99^\circ=4.0$ aq.; **1581**.

Cond. at $0^\circ-35^\circ$; **1968a**. At $25^\circ-99^\circ$; **1581**. At 25° , $\Delta(128)=27.4$, $(1024)=72.5$, $(\infty)=356$; **1371**. $\Delta(1024)=74.2$, $(\infty)=349$; **1968a**.

In HBr and HCl; **30**. In NH_3 , qual.; **606**.

Na.A at 25° , $\Delta(32)=66.6$, $(1024)=76.6$; **1368a**. At $0^\circ-35^\circ$; **1968a**. At $25^\circ-99^\circ$; **1581**.

pseudo-m-Toluic acid. ($\Delta\alpha\zeta$ -Heptadi-inene- δ -carboxylic acid).

$\text{C}_8\text{H}_8\text{O}_2 = (\text{CH}:\text{C}.\text{CH}_2)_2\text{CH}.\text{CO}_2\text{H}$.

$k_A \times 10^4=1.3$; m. p. 47° ; **1413**.

p-Toluic acid. $\text{C}_8\text{H}_8\text{O}_2 = \text{Me.C}_6\text{H}_4.\text{CO}_2\text{H}$.

$k_A \times 10^5$ at $0^\circ=3.8$. At $12^\circ=4.1$; **1968a**. At $18^\circ=5.4$ (colorim.); **1563**, **1781**. At $25^\circ=4.5$. The values given vary considerably, ranging from 5.2; **1371**, to 3.8; **1418**. In all cases k diminishes on diln. $k=4.3$; **1968a**; $=4.6$; **1429**, **1581**. At $35^\circ=4.4$; **1968a**. At $40^\circ=4.6$ aq. At $50^\circ=4.5$ aq. At $60^\circ=4.3$ aq. At $70^\circ=4.1$ aq. At $80^\circ=3.9$ aq. At $90^\circ=3.6$ aq. At $99^\circ=3.3$ aq.; **1581**.

Cond. at 0°–35°; 1968a. At 25°–99°; 1581. At 25°, $\Lambda(256)=38.7$, (1024)=72.6, (∞)=356; 1371. $\Lambda(1024)=66.1$, (∞)=349; 1968a.

In HBr; 30. In HCl, good cond.; 30. In H₂SO₄; 157a. In NH₃, qual.; 606.

Na.A at 25°, $\Lambda(32)=66.2$, (1024)=76.6; 1368a. At 0°–35°; 1968a. At 25°–99°; 1581.

o-Toluidine. C₇H₉N=Me.C₆H₄.NH₂.

$\kappa \times 10^6$ at 25°=1.7; 1569.

$k_B \times 10^{10}$ at 12°=1.34 (colorim.); 1775. At 18°=3.0 (hydrol.); 436, 435. At 25°=3.5 (hydrol.); 435; =3.2 (hydrol.); 271; =0.7 (part.); 548. At 60°=10.9 (inversion); 1880 and 1150.

In benzene, alone and with picric acid, no cond.; 1802. In NH₃, qual.; 606.

Cond. with HCl; 1553. With acetic acid; 1011. With organic compounds; 1223, 1569. As solvent; 1569.

B.HCl at 25°, $\Lambda(64)=93.9$, (256)=97.4; 270; $\Lambda(32)=89.7$; M(32)=98.5; 271. – 435, 1601, 1864. – B.H₂SO₄; 1864.

– Organic salts, in benzene, no cond.; 1801, 1802.

m-Toluidine. C₇H₉N.

$k_B \times 10^{10}$ at 13°=3.5. At 14°=3.9 (colorim.); 1777. At 25°=5.5 (part.); 584; =6 (hydrol.); 271; =2.9 (part.); 548.

In benzene, alone and with picric acid, no cond.; 1802.

B.HCl at 25°, $\Lambda(64)=92.8$, (256)=97.3; 270; $\Lambda(32)=89.0$; M(32)=95.7; 271; 1864. – B.H₂SO₄; 1864.

p-Toluidine. C₇H₉N.

$k_B \times 10^9$ at 15°=0.45 (colorim.); 1777. At 18°=1.6 (hydrol.); 436; 435. At 25°=2.1 (solub.); 1116; =2.2 (hydrol.); 436, 435; =1.6 (hydrol.); 271; (part.) 584; =1.1 (part.); 548. At 60°=3.6 (inversion); 1880 and 1150.

In HBr, HI and H₂S, no cond.; 1897. In HCN, no cond.; 943. In NH₃, qual.; 606. In benzene, alone and with picric acid, no cond.; 1802.

B.HCl at 25°, $\Lambda(64)=93.0$, (256)=97.4; 270; $\Lambda(32)=89.2$; M(32)=93.6; 271; – 435, 1601, 1864, 1882. – B.H₂SO₄; 1864. – Organic salts, in benzene, no cond.; 1801, 1802.

2-Toluidine-3,5-disulphonic acid.

C₇H₉O₆NS₂=Me.C₆H₂(NH₂)(SO₃H)₂. [Me=1; NH₂=2; SO₃H=3,5.]

At 25°, $\mu(64)=332.0$, (1024)=363.4, (∞)=355; 492.

3-Toluidine-2,4-disulphonic acid.

C₇H₉O₆NS₂. [Me=1; NH₂=3; SO₃H=2,4.]

At 25°, $\mu(32)=44.2$, (1024)=253.6, (∞)=355; 492.

2-Toluidine-4-sulphonic acid.

$C_7H_9O_3NS = Me.C_6H_4(NH_2)(SO_3H)$. [Me=1; $NH_2=2$; $SO_3H=4$.]

$k_A \times 10^4$ at $25^\circ = 2.4$; **1372**; $= 2.5$; **492**.

$\Lambda(32) = 30.4$, $(512) = 106.1$, $(\infty) = 355$; **492**. $\Lambda(1024) = 137.5$, $(\infty) = 355$; **1372**.

2-Toluidine-5-sulphonic acid. $C_7H_9O_3NS$.

[Me=1; $NH_2=2$; $SO_3H=5$. $SO_3H=3$ in **492** and **1372**.]

$k_A \times 10^4$ at $25^\circ = 7.5$; **492**, **1372**.

$\Lambda(32) = 51$, $(512) = 162.5$, $(\infty) = 355$; **492**.

3-Toluidine-2-sulphonic acid.

$C_7H_9O_3NS$. [Me=1; $NH_2=3$; $SO_3H=2$.]

$k_A \times 10^4$ at $25^\circ = 3.57$; diminishes on diln.; **492**, **1372**.

$\Lambda(128) = 68.2$, $(1024) = 158.7$, $(\infty) = 355$; **492**.

4-Toluidine-2-sulphonic acid.

$C_7H_9O_3NS$. [Me=1; $NH_2=4$; $SO_3H=2$.]

$k_A \times 10^5$ at $25^\circ = 4.08$.

$\Lambda(32) = 12.6$, $(512) = 47.7$, $(\infty) = 355$; **492**.

4-Toluidine-3-sulphonic acid.

$C_7H_9O_3NS$. [Me=1; $NH_2=4$; $SO_3H=3$.]

$k_A \times 10^4$ at $25^\circ = 8.5$.

$\Lambda(32) = 53.9$, $(1024) = 210.9$, $(\infty) = 355$; **492**.

4-Toluidine-?-sulphonic acid.

$C_7H_9O_3NS$. [Me=1; $NH_2=4$; $SO_3H=?$.]

$k_A \times 10^4$ at $25^\circ = 7.95$; diminishes on diln.; **1372**. [Given in **1372**, as of doubtful structure. Note that k approaches in value k of 4-Toluidine-3-sulphonic acid.]

$\Lambda(64) = 71.4$, $(1024) = 203.9$, $(\infty) = 354$; **1372**.

Toluidino-acetic acid see **Tolylamino-acetic acid**. **α -o-Toluidinobutyric acid.** $C_{11}H_{15}O_2N = Me.C_6H_4.NH.CHEt.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 5.3$; increases on diln.; m. p. 84° .

$\Lambda(200) = 33.5$, $(800) = 66.1$, $(\infty) = 349$; **1840**.

 α -o-Toluidino-iso-butyric acid. $C_{11}H_{15}O_2N = C_7H_7NH.CMe_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 4.9$; m. p. 62° .

$\Lambda(200) = 10.6$, $(800) = 21.2$, $(\infty) = 349$; **1840**.

 β -o-Toluidino-iso-butyric acid. $C_{11}H_{15}O_2N = C_7H_7NH.(CH_3)_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 4.0$; increases on diln.; m. p. 112° .

$\Lambda(200) = 9.4$, $(800) = 19.7$, $(\infty) = 349$; **1840**.

 α -p-Toluidinobutyric acid. $C_{11}H_{15}O_2N$.

$k_A \times 10^5$ at $25^\circ = 1.04$; increases on diln.; m. p. 153° – 156° .

$\Lambda(287) = 18.5$, $(1148) = 36.2$, $(\infty) = 349$; **1840**.

 α -p-Toluidino-iso-butyric acid. $C_{11}H_{15}O_2N$.

$k_A \times 10^5$ at $25^\circ = 6.8$; m. p. 150° .

$\Lambda(200) = 12.7$, $(800) = 24.6$, $(\infty) = 349$; **1840**.

β -p-Toluidino-iso-butyric acid. $C_{11}H_{15}O_2N$.

$k_A \times 10^7$ at $25^\circ = 4.1$; m. p. 195° – 196° .

$\Lambda(200) = 3.1$, $(800) = 6.5$, $(\infty) = 349$; **1840**.

Toluidino-oxalic acid see **Tolyloxamic acid**.

α -o-Toluidinopropionic acid. $C_{10}H_{13}O_2N = C_7H_7NH.CHMe.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 3.9$; increases on diln.; m. p. 115° .

$\Lambda(207) = 28.8$, $(828) = 59$, $(\infty) = 358$; **1840**.

α -p-Toluidinopropionic acid. $C_{10}H_{13}O_2N$.

$k_A \times 10^6$ at $25^\circ = 6.9$; m. p. 158° .

$\Lambda(467) = 19.1$, $(934) = 27$, $(\infty) = 350$; **1840**.

β -p-Toluidinopropionic acid. $C_{10}H_{13}O_2N = C_7H_7NH.CH_2.CH_2.CO_2H$.

$k_A \times 10^6$ at $25^\circ = 2.2$; m. p. 86° .

$\Lambda(200) = 7.8$, $(800) = 14$, $(\infty) = 350$; **1840**.

Toluidinosuccinic acid see **Tolylsuccinamic acid**.

p-Tolunitrile. (Cyanotoluene). $C_8H_7N = Me.C_6H_4.CN$.

$\kappa \times 10^6$ at $25^\circ = 5.4$; **1569**.

In NH_3 , qual.; **606**.

Cond. with Cu oleate; and as solvent; **1569**.

p-Tolu quinoline. (6-Methyl quinoline). $C_{10}H_9N = Me.C_6H_4N$.

$k_B \times 10^9$ at $25^\circ = 1$ (hydrol.).

B. HNO_3 at 25° , $\mu(32) = 82.5$, $(256) = 88.5$; $M(32) = 88.4$; **1293**.

Toluquinone-o-oxime see **Nitroso-cresol**.

o-Toluric acid. (o-Toluylyl glycine).

$C_{10}H_{11}O_2N = MeC_6H_4.CO.NH.CH_2.CO_2H$.

$k_A \times 10^4$ at $25^\circ = 1.93$.

$\Lambda(256) = 69.8$, $(1024) = 124.8$, $(\infty) = 350$; **601**.

m-Toluric acid. $C_{10}H_{11}O_2N$.

$k_A \times 10^4$ at $25^\circ = 2.1$.

$\Lambda(253) = 72.1$, $(1012) = 128.5$, $(\infty) = 350$; **601**.

p-Toluric acid. $C_{10}H_{11}O_2N$.

$k_A \times 10^4$ at $25^\circ = 2.0$.

$\Lambda(275.4) = 73.2$, $(1101.6) = 130$, $(\infty) = 350$; **601**.

2,4-Toluylylene diamine. $C_7H_{10}N_2 = Me.C_6H_3(NH_2)_2$. [Me=1.]

k_B at 15° is probably of the order 10^{-3} .

Second $k_B \times 10^{12} = 3.2$ (colorim.); **1777**.

2,5-Toluylylene diamine. $C_7H_{10}N_2$.

k_B at 15° is probably of the order 10^{-3} .

Second $k_B \times 10^{12} = 1.45$ (colorim.); **1777**.

3,4-Toluylylene diamine. $C_7H_{10}N_2$.

k_B at 15° is probably of the order 10^{-3} .

Second $k_B \times 10^{12} = 1.16$ (colorim.); **1777**.

2,4-Toluylylene-diamine-5-sulphonic acid.

$C_7H_{10}O_3N_2S = Me.C_6H_2(NH_2)_2.SO_3H$. [Me=1; $NH_2=2,4$;
 $SO_3H=5$.]

$k_A \times 10^4$ at $25^\circ = 2.2$.

$\Lambda(256) = 74.1$, $(1024) = 131.2$, $(\infty) = 353$; **492**.

2,6-Toluylene-diamine-4-sulphonic acid. (Diamino-p-sulphotoluic acid). $C_7H_{10}O_3N_2S$. [Me=1; $NH_2=2,6$; $SO_3H=4$.]

$k_A \times 10^5$ at $25^\circ = 4.7$; increases on diln.

$\Lambda(60.4) = 17.7$, $(965.6) = 67.3$, $(\infty) = 353$; **1372**.

Toluyl glycine see **Toluric acid**.

o-Tolylamino-acetic acid. (o-Toluidino-acetic acid. o-Tolyl glycine). $C_9H_{11}O_2N = MeC_6H_4.NH.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 5.9$; increases on diln.; m. p. $148^\circ-149^\circ$; **195**, **1840**.

$\Lambda(200) = 34.7$, $(800) = 68.7$, $(\infty) = 353$; **1840**.

p-Tolylamino-acetic acid. (p-Tolyl glycine). $C_9H_{11}O_2N$.

$k_A \times 10^5$ at $25^\circ = 1.7$; increases on diln.; m. p. $112^\circ-114^\circ$; **195**, **1840**.

$\Lambda(200) = 17.7$, $(800) = 39.2$, $(\infty) = 353$; **1840**.

Tolylene see **Toluylene**.

Tolyl glycine see **Tolylamino-acetic acid**.

1-p-Tolyl-5-hydroxy-1,2,3-triazole-4-carboxylic acid ethyl ester.

$C_{12}H_{13}O_3N_3$.

Enol ester, $k_A \times 10^2$ at $25^\circ = 1$; m. p. $98^\circ-99^\circ$ heated slowly.

$\Lambda(173.5) = 265.7$, $(694) = 326$, $(\infty) = 370$.

Na.A at 25° , $\Lambda(32) = 61.5$, $(1024) = 71.7$; **448**.

o-Tolylimino-diacetic acid. $C_{11}H_{13}O_4N = Me.C_6H_4.N(CH_2CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 2.1$; diminishes on diln.; m. p. $158^\circ-162^\circ$.

$\mu(206) = 167$, $(824) = 243$, $(\infty) = 351$; **1840**.

p-Tolylimino-diacetic acid. $C_{11}H_{13}O_4N$.

$k_A \times 10^5$ at $25^\circ = 1.5$ (extrapolated); diminishes on diln.; dec. 100° .

$\mu(300) = 173.3$, $(600) = 206$, $(\infty) = 351$; **1840**.

p-Tolylloxamic acid. (p-Oxaltoluidic acid. Toluidino-oxalic acid).

$C_9H_9O_2N = CO_2H.CO.NH(C_6H_4.Me)$.

$k_A \times 10^5$ at $25^\circ = 9$.

$\Lambda(128) = 223.5$, $(1024) = 314.8$, $(\infty) = 350$; **1371**.

o-Tolylsuccinamic acid. (o-Succintoluidic acid. o-Toluidinosuccinic acid). $C_{11}H_{13}O_3N = CO_2H.C_6H_4.CO.NH(C_7H_7)$.

$k_A \times 10^5$ at $25^\circ = 2.1$.

$\Lambda(64) = 12.3$, $(1024) = 47.3$, $(\infty) = 350$; **1372**.

p-Tolylsuccinamic acid. $C_{11}H_{13}O_3N$.

$k_A \times 10^5$ at $25^\circ = 1.93$.

$\Lambda(256) = 23.7$, $(1024) = 45.9$, $(\infty) = 350$; **1372**.

Na.A at 25° , $\Lambda(32) = 59.8$, $(1024) = 69.9$; **1367**.

Tolyl sulphonic acid see **Benzyl sulphonic acid**.

Tongue. [The references to this are incomplete.]

Cond.; **623, 253.**

Triacetin see Acetic acid glyceryl ester.

p-Triamino-triphenyl-acetonitrile see Hydrocyan-p-rosaniline.

p-Triamino-triphenyl carbinol. (p-Rosaniline leucohydrate).

$C_{19}H_{19}ON_3 = (C_6H_4NH_2)_3.C.OH.$

The salt-forming base changes to a pseudo-base; at 0° , $\Lambda(512) = 85.5$ after 1 minute, $= 1.7$ after 222 minutes. At 25° , $\Lambda(512)$ is about 135 after 1 minute, is about 0.1 after 180 minutes; **770.**

In $MeNH_2$, small cond.; **637.** In alc.; **75.**

B.Cl at 25° , $\Lambda(128) = 84.2$, $(1024) = 93.3$; **1266; 741, 770, 1265.**
- B.3HCl; **734, 1266.** - B.I. - 2B. SO_4 ; **1731.** - B.CN; **770, 1266.**

Tri-p-aminotriphenyl-methane. (p-Leucaniline).

$C_{19}H_{19}N_3 = (C_6H_4NH_2)_3.CH.$

B.3HCl at 25° , $\mu(128) = 343.9$, $(1024) = 465.3$; **1266, 770.**

Tri-iso-amyl amine. $C_{16}H_{33}N = N(C_5H_{11})_3.$

B.HI in SO_2 ; **1855.**

Tri-o-anisyl carbinol. $C_{22}H_{22}O_4.$

Comparative strength (colorim.); m. p. 181° ; **74.**

o,o,p-Trianisyl carbinol. $C_{22}H_{22}O_4.$

Comparative strength (colorim.); m. p. 109° - 110° ; **74.**

Tri-m-anisyl carbinol. $C_{22}H_{22}O_4.$

Comparative strength (colorim.); m. p. 119.5° ; **74.**

Tri-p-anisyl carbinol. $C_{22}H_{22}O_4.$

Comparative strength (colorim.); m. p. 83.5° - 84° ; **74.**

B.Perchlorate $= C_{22}H_{21}O_8.ClO_4$; m. p. 195° ; in ethylene chloride conducts. Cond. in tetrachloro-ethane; **840.**

Triazo-acetic acid. $C_2H_5O_2N_3 = N_3.CH_2.CO_2H.$

$k_A \times 10^4$ at $25^\circ = 9.9$ aq.; diminishes on diln.; m. p. about 16° .

$\Lambda(28.7) = 59.5$, $(287) = 151.6$, $(\infty) = 390$.

Na.A, $\Lambda(\infty) = 91$; **1422.**

1,2,4-Triazole. (1,3,4-Triazole). $C_2H_4N_3.$

$k_B \times 10^{12}$ [at 25°] $= 2$ (sapon.); m. p. 121° ; **428.**

The 1,2,4- and 1,3,4-Triazoles are identical, the position of the N apparently fluctuating from 2- to 3-.

α -Triazo-propionic acid. $C_3H_5O_2N_3 = MeCH(N_3).CO_2H.$

$k_A \times 10^4$ at $25^\circ = 8.8$ aq.; diminishes on diln.

$\Lambda(32.6) = 59.9$, $(326) = 155.5$, $(\infty) = 386$.

Na.A, $\Lambda(\infty) = 87$; **1422.**

Tribenzyl amine. $C_{21}H_{21}N = (PhCH_2)_3.N.$

Too insol. in aq. to measure. From hydrolysis, k_B is hardly greater than 4×10^{-9} ; **664.**

Tribromo-acetic acid. $C_2HO_2Br_3 = CBr_3.CO_2H$.At 25.2°, $\Lambda(32) = 321.4$, $(\infty) = 357.9$; 1694.

In inorg. solvents; 1833. In organic solvents; 291, 1827, 1834.

Cond. with dimethyl-pyrone; 1436, 1827.

Na.A at 25°, $\Lambda(32) = 69.4$, $(1024) = 80.1$; 1694.**4,5,6-Tribromo-aniline-2-sulphonic acid.** (Tribromo-aminobenzene sulphonic acid). $C_6H_4O_2NBr_3S = Br_3C_6H(NH_2).SO_3H$. [$NH_2 = 1$; $Br = 4,5,6$; $SO_3H = 2$.]At 25°, $\Lambda(194.5) = 343$, $(\infty) = 354$; 1372.**2,4,6-Tribromo-aniline-3-sulphonic acid.** $C_6H_4O_2NBr_3S$. [$NH_2 = 1$; $Br = 2,4,6$; $SO_3H = 3$.]At 25°, $\Lambda(111) = 340$, $(\infty) = 354$; 1372.**2,5,6-Tribromo-aniline-3-sulphonic acid.** $C_6H_4O_2NBr_3S$. [$NH_2 = 1$; $Br = 2,5,6$; $SO_3H = 3$.]At 25°, $\Lambda(111.5) = 338$, $(\infty) = 354$; 1372.**Tribromo-benzene-azophenol** see **Hydroxy-tribromo-azobenzene.****2,4,6-Tribromo-benzene diazonium hydroxide.** (Tribromo-diazo benzene). $C_6H_3ON_2Br_3 = Br_3.C_6H_2.N_2.OH$. $k_B \times 10^5$ at 0° is less than 1; 501, 737. $B.NO_2$ at 25°, $\Lambda(32) =$ is about 80; 425. - $B.CN$ in Et alc., no cond.; 735.**2,4,6-Tribromo-benzene sulphonic acid amide.** $C_6H_4O_2NBr_3S = Br_3.C_6H_2.SO_2NH_2$.

Cond. with NaOH; 781.

2,4,6-Tribromo-benzoic acid. $C_7H_3O_2Br_3 = Br_3.C_6H_2.CO_2H$. $k_A \times 10^2$ at 25° = 3.9. $\Lambda(128.6) = 324.5$, $(\infty) = 379$; m. p. 188°-189°; 1909.**Tribromo-diazo benzene** see **Tribromo-benzene diazonium hydroxide.****Tribromo-methane.** (Bromoform). $CHBr_3$. $\alpha \times 10^8$ at 25° is less than 2; b. p. 144°-146.2° @ 740.6 mm.; 1388.In NH_3 , qual.; 606.Cond. with $AgNO_3$ and organic compounds; 1388.**Tribromo-triketo-pentamethylene.** $C_5HO_2Br_3$. $\mu(30.4) = 324.6$, $(972.8) = 349.6$; 729.**Tri-iso-butyl amine.** $C_{12}H_{27}N = (C_4H_9)_3N$. $k_B \times 10^4$ at 25° = (2.7 aq.); about 16% too high. $\Lambda(489) = 57.6$, $(978) = 74.2$, $(\infty) = 190$; the values are only approximate; 271.**Tributylin** see **Butyric acid glyceryl ester.****Tricarballic acid.** (Carballic acid). $C_8H_8O_6 = CO_2H.CH_2.CH(CO_2H).CH_2.CO_2H$.

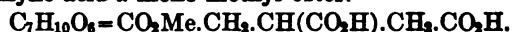
$k_A \times 10^4$ at $15.3^\circ = 2.2$ aq.; **164**. At $25^\circ = 2.2$; m. p. 158° ; **237**, **1839**, **1859**, **67**.

At 25° , $\mu(32) = 28.3$, $(1024) = 139$, $(\infty) = 353$; **1839**. Also; **172**, **1495**.

Cond. with KOH; **172**. With MoO_3 ; **1495**.

K salts; **164**, **495**.

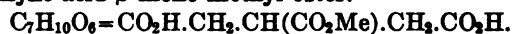
Tricarballic acid α -mono methyl ester.



$k_A \times 10^5$ at $25^\circ = 7.5$.

$\mu(30.5) = 16.4$, $(61) = 23$, $(\infty) = [351]$; **237**.

Tricarballic acid β -mono methyl ester.



$k_A \times 10^5$ at $25^\circ = 9.25$, and 9.45 .

$\mu(25.6) = 16.8$, $(102.8) = 32.9$, $(\infty) = [351]$, for $k = 9.45$; **237**.

Trichloro-acetaldehyde see **Chloral**.

Trichloro-acetic acid. $\text{C}_2\text{HO}_2\text{Cl}_3 = \text{CCl}_3\text{CO}_2\text{H}$.

α at $60^\circ = 0$; **1957**.

$k_A \times 10$ at $0^\circ = 3$ (hydrol.); $= 9$ (cond.); **461**. At $12.5^\circ = 2$; **709**.

At $16^\circ = 2$; **1499**. At $18^\circ = 2 - 4$ (cond.); $= 3$ (hydrol.); **460**; $= 2.2$ (hydrol.); **1973**. At $25^\circ = 12.1$ (inversion); **1370**. 12.1 is a better value than 4 , (calculated); **584**. Relative value; **693**, **1643**.

Cond. at 0° ; **461**, **911**, **2004**. At 10° ; **911**. At 12.5° ; **709**. At 16° ; **1499**. At 18° ; **460**, **1317**. At 25° , $\Lambda(32) = 323.0$, $(1024) = 356.0$, $(\infty) = [360]$; **1370**. - **294**, **782**, **877**, **911**, **2004**. At 35° ; **911**. At 60° ; **1957**.

In HBr, HCl, HI and H_2S , no cond.; **1897**. In HBr, no cond.; **1645**. In HCN; **943**. In H_2SO_4 , no cond.; **157**, **157a**, **750**. In N_2O_4 , no cond.; **297**, **602**. In SO_2 , no cond.; **1842**. In NH_3 , qual.; **606**. In acetone; **336**, **1286**. In alcohols; **335**, **654**, **754**, **782**, **932**, **1021**, **1263**, **1286**, (1620) , **1820**, **1970**, **1971**, **2029**. In EtBr, no cond.; **1435**, **1437**. In formic acid; **2008**. In hydrocarbons; **1223**. In pyridine; **754**. In silicic acid esters; **1223**. In thiocyanic acid esters; **939**. In thiocarbimides; **939**, **1223**.

Cond. with KOH; **294**. With aniline; **1900**. With dimethylpyrone in organic solvents; **1435**. — [See also cond. in various solvents in preceding paragraph.] — Under pressure of 1–500 atmospheres; **220**. Purity as shown by e. m. f.; **372**.

Ba.2A, in EtBr, slight cond.; **1437**. - **Li.A**; **1367**. - **Hg.2A**; **1084**. - **K.A**; **294**, **1367**, **1437**, **1439**. - **Na.A** at 25° , $\Lambda(32) = 69.6$, $(1024) = 79.2$; **1368a**, **1367**; - **335**, **1084**, **1437**. - **UO₂.2A**; **449**.

Trichloro-acetic acid amide. $C_2H_5ONCl_3 = CCl_3.CONH_2$.

Cond. with NaOH; 781.

Trichloro-acetic acid ethyl ester. $C_4H_5O_2Cl_3$.

Effect of temperature on cond.; 106.

2,4,6-Trichloro-benzene diazonium hydroxide. (Trichloro-diazo benzene). $C_6H_3ON_2Cl_3$.

B.Cl($=Cl_3.C_6H_3.N_2.Cl$) at 25° , $\Lambda(32)=94.6$, $(512)=102.8$; 730.

$\alpha\alpha\beta$ -Trichloro-butyric acid. $C_4H_5O_2Cl_3 = Me.CHCl.CCl_3.CO_2H$.

$k_A \times 10$ at $18^\circ=2$; 460, 1317. At 25° is about 1 = 50%; 1370.

Cond.; 1317. At 25° , $\Lambda(32)=288.5$, $(1024)=343.1$, $(\infty)=352$; 1370.

In N_2O_4 , no cond.; 602. In Et alc.; 656a; 654.

Trichloro-diketo-pentamethylene-hydroxy-carboxylic acid. $C_6H_5O_5Cl_3$.

$k_A \times 10^2$ at $25^\circ=6$; m. p. 170° . $\mu(32)=258$, $(1024)=353.4$, $(\infty)=355$; 729, 1186.

In Et alc., alone and with boric acid; 1185.

Cond. with boric acid; 1186.

Trichloro-lactic acid. $C_3H_5O_3Cl_3 = CCl_3.CHOH.CO_2H$.

$k_A \times 10^3$ at $18^\circ=4.8$; 1317. At $25^\circ=4.8$; diminishes on diln.; 1370, 1186.

Cond.; 943. At 25° , $\Lambda(32)=115.1$, $(1024)=302.2$, $(\infty)=356$; 1370.

In HCN; 943. In Et alc., alone and with boric acid; 1185.

Cond. with boric acid; 1186.

Na.A at 25° , $\Lambda(32)=65.2$, $(1024)=74.4$; 1368a.

Trichloro-lacto nitrile. (Chloralcyanohydrate).

$C_3H_2ONCl_3 = CCl_3.CHOH.CN$.

In NH_3 , qual.; 606.

Trichloro-methane. (Chloroform). $CHCl_3$.

$\alpha \times 10^8$ at 25° is less than 2; 740, 1388; =4.4; 1830; 305, 386, 1477.

In HBr and H_2S , no cond.; 1897. In HCN, no cond.; 943. In NH_3 , qual.; 606. In $MeNH_2$, fair cond.; 637.

Cond. with $AgNO_3$; 1388. With organic compounds; 386, 1388.

As solvent; 740, 1435, (1445), 1830.

Trichloro-R-pentene-dihydroxy-carboxylic acid.

$C_6H_5O_4Cl_3 = (OH)_2C_5H_2Cl_3.CO_2H$.

$k_A \times 10^3$ at $25^\circ=8.8$ aq.; diminishes on diln.; m. p. 177° with dec.; 1186, 727.

$\mu(64)=183$, $(512)=288$, $(\infty)=352$.

Cond. with boric acid; 1186.

2,4,6-Trichloro-phenol. $C_6H_3OCl_3 = Cl_3.C_6H_3.OH$.

$k_A \times 10^8$ at $25^\circ=2.6$ (hydrol.); 733 and 1150; is less than 100 (cond.); 733; see also 738.

- At 25°, $\Lambda(256)=5.4$, $(1024)=12.3$, $(\infty)=356$; **733**.
 In SO₂; **1842**. In Et alc.; **782**. In pyridine; **754**.
 Cond. with cinchonine, in acetone, Et and Me alc.; **1620**.
Trichloro-tetraketo-hexamethylene-hydrate. C₆H₂O₈Cl₃.
 $k_A \times 10^3 = 1.2$; diminishes on diln. $\mu(64)=317$, $(1024)=359$,
 $(\infty)=355$; m. p. 158°; **729**.
Trichloro-triketo-pentamethylene. C₅H₃O₃Cl₃.
 $\mu(31.2)=323$, $(998.4)=354$; **729**.
Tricyano-methane see **Cyanoforn**.
Triethyl-allyl ammonium chloride. C₆H₂₀NCl = (Et₃)(C₃H₅)N.Cl.
 At 25°, $\Lambda(32)=87.3$, $(1024)=98.9$; **270**.
Triethyl-amine. C₆H₁₅N = Et₃N.
 $k_B \times 10^4$ at 0° = 2.2. At 9° = 3.8; **776**. At 25° = 4.4; **776**; = 6.4 aq.,
 16% too high; **271**, **664**. At 30° = 4.6. At 35° = 4.6. At
 40° = 5.1. At 50° = 5.0; **776**. - See also **1283**.
 Cond.; **979**, **1363**. At 25°, $\Lambda(32)=27.1$, $(256)=66.4$, $(\infty)=200$;
271.
 In Me alc.; **335**.
 Cond. with organic compounds; **979**.
 B.HCl at 25°, $\Lambda(32)=88.3$, $(1024)=100.2$; **270**. In HBr; **1646**;
 qual.; **1237**. In HCl; **1646**. In HI; **32**, **1646**. In H₂S; **33**,
1646; qual.; **1237**. In SO₂; **1855**.
Triethyl-iso-amyl ammonium hydroxide. C₁₁H₂₇ON.
 B.Cl = (Et₃)(C₅H₁₁)N.Cl, at 25°, $\Lambda(32)=82.2$, $(1024)=93.7$; **270**.
Triethyl-iso-butyl ammonium hydroxide. C₁₀H₂₅ON.
 B.Cl = (Et₃)(C₄H₉)N.Cl, at 25°, $\Lambda(32)=84.8$, $(1024)=96.4$; **270**.
Triethyl-iodomethyl- see **Iodomethyl-triethyl-**
Triethyl-phenyl ammonium hydroxide. C₁₂H₂₁ON = (Et₃)(Ph)N.OH.
 At 25°, $\Lambda(32)=184$, $(1024)=185$; aq. used for soln. was not pure;
1363. Quoted in **271**.
Triethyl phosphine. C₆H₁₅P = Et₃P.
 Triethyl phosphine dibromide. Et₃P.Br₂, $\mu(64)=513.6$; **760**.
 Triethyl-phosphine-carbon-disulphide methyl iodide. (Triethyl-
 phosphonium thiocarboxylic acid anhydride methyl iodide).
 Et₃P.CS₂.MeI, $\mu(32)=93.8$; **760**.
Triethyl phosphine sulphide. C₆H₁₅SP = Et₃PS.
 B.MeI, at 25°, $\Lambda(32)=89.7$, $(512)=105.7$; **760**.
Triethyl-propyl ammonium chloride. C₉H₂₂NCl = (Et₃)(Pr)N.Cl.
 At 25°, $\Lambda(32)=85.1$, $(1024)=97.0$; **270**.
Triethyl-rosaniline see **Hofmann's Violet**.
Triethyl-sulphine see **Triethyl sulphonium**.
Triethyl sulphonium hydroxide. (Triethyl sulphine hydroxide).
 C₆H₁₅OS = Et₃S.OH.

At 25°, $\Lambda(32)=201$, $(1024)=205$; 1363. Quoted in 271. Qual.; 1802.

B.Cl(=Et₃S.Cl), at 25°, $\Lambda(32)=89.7$, $(1024)=102.2$; 270. - B.I in aq.; 334, 335, 760, 2029. In acetone; 334. In alcohols; 334, 335, 2029.

Triethyl tellurium chloride. C₆H₁₈ClTe=Et₃TeCl.

At 25°, $\Lambda(32)=87.4$, $(1024)=100.2$; 270.

Triglycolamic acid. C₆H₉O₆N=N(CH₂CO₂H)₃.

Hg salt, e. m. f.; 963.

Triglycyl-aminoacetic acid ethyl ester. (Aminoacetyl-bisglycyl-aminoacetic acid ethyl ester). C₁₀H₁₈O₈N₄.

On hydrolysis shows a rise in cond.; 145b.

Triglycyl-glycine see Triglycyl-aminoacetic acid.

1,2,4-Trihydroxy-anthraquinone see Purpurin.

Trihydroxy-benzaldehyde see Hydroxy-hydroquinone aldehyde.

" " see Phloroglucinol aldehyde.

" " see Pyrogallol aldehyde.

1,2,3-Trihydroxy-benzene see Pyrogallol.

1,2,4-Trihydroxy-benzene see Hydroxy-hydroquinone.

1,3,5-Trihydroxy-benzene see Phloroglucinol.

2,3,4-Trihydroxy-benzoic acid see Pyrogallol carboxylic acid.

2,4,6-Trihydroxy-benzoic acid see Phloroglucinol carboxylic acid.

3,4,5-Trihydroxy-benzoic acid see Gallic acid.

3,4,5-Trihydroxy-2-bromobenzoic acid see Bromogallic acid.

3,4,5-Trihydroxy-chlorobenzoic acid see Chlorogallic acid.

3,4,5-Trihydroxy-2,6-dibromo-benzoic acid see Dibromo-gallic acid.

3,4,5-Trihydroxy-2,6-dichloro-benzoic acid see Dichloro-gallic acid.

l-Trihydroxy-glutaric acid. C₆H₈O₇=CO₂H.(CHOH)₃.CO₂H.

$k_A \times 10^3$ at 25°=1.5; diminishes on diln.; m. p. 127°; 1542.

[Since k is twice the value of k of the other stereo isomers, apparently there is some error. Compare the tartaric acids.]

$\mu(52.5)=82.2$, $(105.3)=107.7$, $(\infty)=352$; 1542.

Co.A. - Mg.A at 18°, $\mu(32)=52.0$, $(1024)=124.0$. - Ni.A; 1736.

rac.-Trihydroxy-glutaric acid. C₆H₈O₇.

$k_A \times 10^4$ at 25°=6.9; m. p. 154.5° cor.

$\mu(52.5)=61.4$, $(105.3)=82.9$, $(\infty)=352$; 1542.

inact.-Trihydroxy-glutaric acid. C₆H₈O₇.

$k_A \times 10^4$ at 25°=6.6.

$\mu(52.5)=59.5$, $(105.3)=81.6$, $(\infty)=352$; 1542.

2,3,4-Trihydroxy-quinoline. ($\beta\gamma$ -Dihydroxy-carbostyryl). C₉H₇O₂N.

At 25°, $\mu(1250)=2.03$; 1823.

Triiodo-methane. (Iodoform). CHI₃.

In H₂S, conducts; 27. In NH₃, qual.; 606.

Cond. with allyl thiocarbimide; 1223.

Trimercury-diacetone hydroxide. $C_6H_{12}O_6Hg_3$.At 18° , $\mu(256)=0.018$, $(512)=0.022$.

Cond. with HCl, showing decomposition.

B. Picrate at 18° , $\mu(1100)=0.04$; **59**.**Trimesic acid.** $C_6H_6O_6=C_6H_3(CO_2H)_3$. [$CO_2H=1,3,5$.] $k_A \times 10^4$ at $25^\circ=9?$. Increases on diln. $\mu(55)=56.5$, $(220)=125.5$, $(880)=225$, $(\infty)=352$; **175**.**Trimethyl-acetic acid.** (Pivalic acid). $C_5H_{10}O_2=Me_3C.CO_2H$. $k_A \times 10^6=9.8$; m. p. $34^\circ-35^\circ$. $\Lambda(32)=6.2$, $(1024)=32.9$, $(\infty)=354$; **1448**.**Trimethyl-acrylic acid.** $C_6H_{10}O_2=Me_3C:CM_2.CO_2H$. $k_A \times 10^5$ at $25^\circ=3.9$; m. p. $69.6^\circ-70.5^\circ$; **640, 1704**.At 25° , $\Lambda(116.5)=22.9$, $(932)=60.2$, $(\infty)=353$; **1704**.**Trimethyl-allyl ammonium chloride.** $C_6H_{14}NCl=(Me_3)(C_3H_5)N.Cl$.At 25° , $\Lambda(32)=93.9$, $(1024)=105.3$; **270**.**Trimethyl amine.** $C_3H_9N=Me_3N$. $k_B \times 10^5$ at $0^\circ=2.4$; **776**. At $25^\circ=5.9$; **776**; $=7.4$ aq.; about 16% too high; **271**; $=6.5$ (neutral.); **299a**. Relative strength; **1631**. At $35^\circ=6.8$; **776**.Cond.; **299a, 759, 1363**. At 25° , $\Lambda(32)=10.2$, $(256)=27.5$, $(\infty)=214$; **271**.In NH_3 , qual.; **606**.Cond. with HCl; **299a**. With $HClO$; **759**.B. HCl at 25° , $\Lambda(32)=102.7$, $(1024)=114.6$; **270**. In SO_2 ; **1855**.In NH_4OH ; **650**.**Trimethyl-aminoacetic acid.** (Betaine. Trimethyl-glycocoll). $C_5H_{11}O_2N+H_2O=OH.NMe_3.CH_2.CO_2H$. $k_A \times 10^{14}$ at 25° is about 1 (catal.); **890**; $=1.33$ (hydrol.); **1682**. $k_B \times 10^{13}$ at $25^\circ=8.7$ (catal.); **890**; $=7.6$ (hydrol.); **1984, 271**; $=6.2$ (hydrol.); **350** and **1150**; - **1682, 1773**.At 25° , $\Lambda(32)=1.7$, $(256)=1.8$; **350**.Cond. with NaOH; **1984**.B. HBr; **350**. - B. HCl at 25° , $\Lambda(64)=103$, $(1024)=111$; $M(64)=273$; **271**; - **350, 890, 1984**.**Trimethyl-aminoacetic acid ethyl ester.** $C_7H_{15}O_2N+H_2O=OH.NMe_3.CH_2.CO_2Et$. $k_B \times 10^{10}$ at $25^\circ=1.1$ (catal.); **890**.**o-Trimethyl-aminobenzoic acid anhydride.** (o-Benzbetaine). $C_{10}H_{13}O_2N+H_2O=OH.NMe_3.C_6H_4.CO_2H$. $k_A \times 10^{14}$ at 25° is less than 1 (catal.); m. p. 225° . $k_B \times 10^{13}$ at $25^\circ=2.8$.Cond. of 0.06 normal soln. is about three times that of aq.; **414**.**o-Trimethyl-aminobenzoic acid methyl ester.** $C_{11}H_{17}O_2N=OH.NMe_3.C_6H_4.CO_2Me$.

k_B at 25° is very great (catal.)

At 1.2°, $\Delta(60)=0.13$; **414**. [If k_B is really large, the cond. ought to be greater than the value given.]

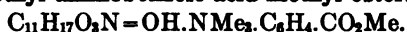
m-Trimethyl-aminobenzoic acid anhydride. (m-Benzbetaine).



$k_A \times 10^{14}$ at 25° is less than 1 (catal.); m. p. 215°–220°.

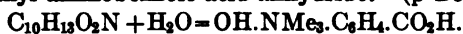
$k_B \times 10^{11}$ at 25° = 3.4 (catal.); **414**.

m-Trimethyl-aminobenzoic acid methyl ester.



k_B at 25° is very great (catal.); **414**.

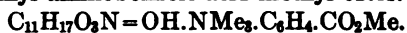
p-Trimethyl-aminobenzoic acid anhydride. (p-Benzbetaine).



k_A at 25° is about 10^{-14} (catal.); is between 10^{-7} and 10^{-8} (cond.); m. p. 255°.

$k_B \times 10^{11}$ at 25° = 3.2 (catal.); **890**.

p-Trimethyl-aminobenzoic acid methyl ester.



k_B at 25° is very great (catal.); **890**.

o-Trimethyl-aminophenol. $C_9H_{15}O_2N = OH.NMe_3.C_6H_4.OH.$

At 25°, $\mu(32)=1.7$.

B.Cl (= Cl.NMe₃.C₆H₄.OH) at 25°, $\mu(32)=89.4$, (1024)=99.9; **755**.

m-Trimethyl-aminophenol. (m-Hydroxy-trimethyl-phenyl ammonium hydroxide). $C_9H_{15}O_2N.$

At 25°, $\mu(32)=2.2$; m. p. 110°–111°.

B.Cl at 25°, $\mu(32)=102.9$, (1024)=114.9; **755**.

p-Trimethyl-aminophenol. $C_9H_{15}O_2N.$

At 25°, $\mu(32)=2.6$.

B.Cl at 25°, $\mu(32)=114.1$, (1024)=121.4; **755**.

Trimethyl-iso-amyl ammonium hydroxide. $C_8H_{21}ON.$

B.Cl, = (Me₃)(C₅H₁₁)N.Cl, at 25°, $\Delta(32)=86.7$, (1024)=98.2; **270**.

Trimethyl arsine. $C_3H_9As.$

Trimethyl arsine dibromide, $Me_3As.Br_3$, $\mu(64)=496.8$, (1024)=559.6; **760**.

2,3,4-Trimethyl-benzoic acid. (Hemellitolicarboxylic acid. Preh-nitylic acid. 1,2,3-Trimethyl-4-benzoic acid).



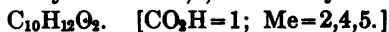
$k_A \times 10^5$ at 25° = 3.5; m. p. 165°; **275**; = 3.1; **1418**.

$\Delta(512)=44.3$, (1024)=61, (∞)=351; **275**.

Na.A at 25°, $\Delta(32)=60.6$, (1024)=70.9; **275**.

2,4,5-Trimethyl-benzoic acid. (*pseudo*-Cumene carboxylic acid.

Durylic acid. 1,2,4-Trimethyl-5-benzoic acid).



$k_A \times 10^5$ at 25° = 9.9; diminishes on diln.

$\Delta(1024)=94.8$, (∞)=351; **1418**.

2,4,6-Trimethyl-benzoic acid. (β -*iso*-Durylic acid. Mesitylene 2-mono carboxylic acid. 1,3,5-Trimethyl-4-benzoic acid).

$C_{10}H_{12}O_2$. [$CO_2H=1$; Me=2,4,6.]

$k_A \times 10^4$ at $25^\circ=3.8$; increases, then diminishes on diln.; m. p. $150.5^\circ-151^\circ$; **275, 1418**.

$\Lambda(128)=69.2$, $(1024)=160.2$, $(\infty)=352$; **275**.

Na.A at 25° , $\Lambda(32)=61.5$, $(1024)=72.4$; **275**.

Trimethyl-benzoyl formic acid see Mesityleneglyoxylic acid.

Trimethyl-2-bromoethyl ammonium chloride.

$C_5H_{12}NClBr=(Me_3)(C_2H_4Br)N.Cl$.

At 25° , $\Lambda(32)=91.5$, $(1024)=104.0$; **270**.

Trimethyl-*iso*-butyl ammonium chloride.

$C_7H_{18}NCl=(Me_3)(C_4H_9)N.Cl$.

At 25° , $\Lambda(32)=89.7$, $(1024)=101.2$; **270**.

Trimethyl-carbinamine see *tertiary*-Butylamine.

Trimethyl-carbinol see *tertiary*-Butyl alcohol.

Trimethyl- β -chloroethyl ammonium chloride.

$C_5H_{12}NCl_2=(Me_3)(C_2H_4Cl)N.Cl$.

At 25° , $\Lambda(32)=92.8$, $(1024)=105.0$; **270**.

Trimethyl-dioxy-purine see Caffeine.

Trimethylene-carboxylic acid. (Cyclopropane-carboxylic acid. Ethylene acetic acid). $C_4H_6O_2$.

$k_A \times 10^5$ at $25^\circ=1.7$; b. p. $182^\circ-184^\circ$; **238**; $=1.4$; **231, 420, 2026**.

$\Lambda(35.8)=8.8$, $(71.6)=12.2$, $(\infty)=358$; **238**. $\Lambda(21.1)=6.2$, $(673.6)=33.6$, $(\infty)=352$; **2026**.

Trimethylene diamine. $C_3H_{10}N_2=NH_2.(CH_2)_3.NH_2$.

$k_B \times 10^4$ at $25^\circ=3.5$ aq.; about 16% too high; **271**.

Cond.; **1354**. $\Lambda(32)=20.6$, $(256)=50.2$, $(\infty)=203$; **271**.

B.2HCl at 25° , $\Lambda(32)=113.0$, $(1024)=134.7$; **270**. - Complex salts; **1752, 1758, 1762**.

Trimethylene-1,1-dicarboxylic acid. (Vinaconic acid). $C_5H_6O_4$.

$k_A \times 10^3$ at $25^\circ=2.0$; diminishes on diln.; m. p. $140^\circ-141^\circ$; **238, 1638**.

Second $k_A \times 10^7=1.2$ (inversion); **1638**.

At 25° , $\mu(34.2)=197.3$, $(136.6)=273.7$, $(\infty)=356$; **238**.

mal.-Trimethylene-1,2-dicarboxylic acid. (*cis*-acid). $C_5H_6O_4$.

$k_A \times 10^4$ at $25^\circ=4.1$; m. p. $136^\circ-137^\circ$.

$\mu(50.7)=47.7$, $(202.8)=88.2$, $(\infty)=356$; **238**.

fum.-Trimethylene-1,2-dicarboxylic acid. (*trans*-acid). $C_5H_6O_4$.

$k_A \times 10^4$ at $25^\circ=2.1$; diminishes on diln.; m. p. $171^\circ-173^\circ$.

$\mu(95)=46.9$, $(380.1)=85.9$, $(\infty)=356$; **238**.

Trimethylene-sulphide see Trithio-formaldehyde.

Trimethylene-tetracarboxylic acid see Propargylenetetracarboxylic acid.

Trimethylene-1,1,2-tricarboxylic acid. $C_6H_6O_6$.

$k_A \times 10^3$ at $25^\circ = 9.1$; **1839**.

Second $k_A \times 10^5 = 4.1$ (cond.); **1911**.

At 25° , $\mu(32) = 146.2$, $(1024) = 338$, $(\infty) = 354$; **1839**.

cis-trans-Trimethylene-1,2,3-tricarboxylic acid see *pseudo*-Aconitic acid.

Trimethyl-ethyl ammonium hydroxide. $C_8H_{15}ON$.

B.Cl, $= (Me_3)(Et)N.Cl$, at 25° , $\Lambda(32) = 96.1$, $(1024) = 108.0$; **270**.

Trimethyl-ethylene lactic acid. $C_6H_{12}O_3 = Me.CHOH.CMe_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 2.2$; diminishes on diln. $\Lambda(33.6) = 9.4$, $(1076.2) = 46.4$, $(\infty) = 351$; **1704**.

tertiary-Trimethyl-ethylene lactic acid, see β -Hydroxy- $\alpha\beta\beta$ -trimethyl-propionic acid.

aaa'-Trimethyl-glutaric acid. (Formerly called dimethyl-adipic acid). $C_8H_{14}O_4 = CO_2H.CHMe.CH_2.CMe_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 3.5$; m. p. 94° ; **202**, **175**.

$\mu(85.3) = 18.5$, $(1365.1) = 68.5$, $(\infty) = 350$; **175**.

2Na.A at 25° , $\mu(32) = 76.6$, $(1024) = 97.5$; **175**.

$\alpha\beta\beta$ -Trimethyl-glutaric acid.

$C_8H_{14}O_4 = CO_2H.CH_2.CMe_2.CHMe.CO_2H$.

$k_A \times 10^4$ [at 25°] = 1.5; diminishes on diln.; m. p. 88° – 89° .

$\mu(32) = 23.4$, $(1024) = 109.6$, $(\infty) = 351$; **76**.

Trimethyl-glycocol see Trimethyl-aminoacetic acid.

Trimethyl-hydroxy ammonium chloride. (Trimethyl-oxamine hydrochloride). $C_3H_{10}ONCl = (Me_3)(OH)N.Cl$.

At 25° , $\Lambda(32) = 101.9$, $(1024) = 142.3$; **759**.

Trimethyl-hydroxy ammonium iodide. $C_3H_{10}ONI$.

At 25° , $\Lambda(32) = 103.3$, $(1024) = 145.8$; **759**.

Trimethyl-iodomethyl ammonium hydroxide.

$C_4H_{12}ONI = (Me_3)(CH_2I)N.OH$.

At 25° , $\Lambda(64) = 203$, $(256) = 202$; **271**.

B.Cl, $= (Me_3)(CH_2I)N.Cl$, at 25° , $\Lambda(32) = 92.6$, $(1024) = 105.2$; **270**.

Trimethyl-methyl iodide see *tertiary*-Butyl iodide.

Trimethyl- α -naphthyl ammonium hydroxide. $C_{13}H_{17}ON$.

B.Cl, $= (Me_3)(C_{10}H_7)N.Cl$, at 25° , $\Lambda(32) = 86.6$, $(1024) = 98.3$; **270**.

Trimethyl- β -naphthyl ammonium hydroxide. $C_{13}H_{17}ON$.

B.Cl at 25° , $\Lambda(32) = 86.5$, $(1024) = 97.8$; **270**.

Trimethyl-m-nitrophenyl ammonium hydroxide. (m-Nitrotrimethylaniline). $C_9H_{14}O_3N_2 = (NO_2)C_6H_4.NMe_3.OH$.

B.Br. – B.Cl at 25° , $\Lambda(100) = 99.3$, $(801) = 106.9$; **660a**.

Trimethyl-phenyl ammonium hydroxide. $C_9H_{15}ON = (Me_3)(Ph)N.OH$.

At 25° , $\Lambda(256) = 189.8$; **770**.

B.Cl at 25° , $\Lambda(32) = 90.1$, $(1024) = 101.6$; **270**.

3,4,4-Trimethyl-1-phenylpyrazolone (5). $C_{12}H_{14}ON_2$.In aq. soln., no cond.; **977**.**Trimethyl propyl ammonium hydroxide.** $C_3H_{17}ON = (Me_3)(Pr)N.OH$.B.Cl at 25°, $\Lambda(32) = 91.9$, (1024) = 103.6; **270**.**2,4,6-Trimethyl-pyridine.** (*sym.*-Collidine). $C_8H_{11}N$. $k_B \times 10^7$ at 10° = 1.22 (hydrol.). At 15° = 1.42 (hydrol.); **1144**.At 25° = 2.05 (hydrol.); **1144**; = 2.5 (cond.); **664**. At 40° = 3.05 (hydrol.). At 50° = 3.75 (hydrol.); **1144**.At 25°, $\Lambda(35.6) = 0.60$, (71.2) = 0.88, (∞) = 202; **664**. - **1144**.In NH_3 , qual.; **606**.Cond. with p-nitrophenol; **1144**.B.HCl at 25°, $\Lambda(64) = 94.1$, (128) = 97.6; **270**. At 10°-50°; **1144**.**Trimethyl stibine.** $C_3H_9Sb = Me_3Sb$.Dibromide ($= Me_3Sb.Br_2$), $\mu(64) = 500.0$, (1024) = 521.0; **760**.**Trimethyl-stibine hydroxy bromide.** $C_3H_{10}OBrSb = Me_3Sb.(OH)Br$.At 25°, $\mu(64) = 201.2$, (1024) = 243.9; **760**.**Trimethyl-succinic acid.** $C_7H_{12}O_4 = CO_2H.CMe_2.CHMe.CO_2H$. $k_A \times 10^4$ at 25° = 3.1; diminishes on diln.; m. p. 139.5°; **188**, **1838**; m. p. 147°; **60**, **68**; m. p. 151°-152°; **232**; = 3.2; m. p. 148°; **234**; m. p. 140°; **2018**, **2021**.At 25°, $\mu(32) = 33$, (1024) = 148, (∞) = 351; **1838**.**Trimethyl-succinic acid**; m. p. 100°-105°, $k_A = 5-6 \times 10^{-5}$, was a mixture of trimethyl-succinic acid with dimethyl-glutaric acid.**Trimethyl-succinic acid mono methyl ester.** $C_8H_{14}O_4$. $k_A \times 10^5$ at 25° = 3.1; = 2.7 for one preparation. $\mu(42.6) = 12.6$, (170.6) = 24.4, (∞) = 351, for $k = 3.1$; **244**.**Trimethyl-sulphin** see **Trimethyl sulphonium**.**Trimethyl sulphonium hydroxide.** $C_3H_{10}OS = Me_3S.OH$.[At 25°], $\Lambda(32) = 213.4$, (256) = 219.9, (∞) = 215; **1549**.In Me alc.; **335**.B.Br, in Me alc.; **335**. - B.Cl at 25°, $\Lambda(32) = 101.2$, (1024) = 117.8; **270**. In Me alc.; **335**. - B.I at 0°; **1826**. At 25°, $\Lambda(32) = 100.2$, (1024) = 112.6; **2029**; **1549**. In HCN; **369**. In NH_3 ; **604**. In other inorg. solvents; **1826**, **1833**, **1855**. In organic solvents; **335**, **336**, **1844**, **2029**.**Trimethyl tellurium hydroxide.** $C_3H_{10}OTe = Me_3Te.OH$.At 25°, $\Lambda(64) = 202$, (∞) = 205; **271**.B.Cl at 25°, $\Lambda(32) = 91.6$, (1024) = 105.1; **270**. **$\alpha\alpha\beta$ -Trimethyl-tricarballic acid** see **Camphoronic acid**. **$\alpha\alpha\gamma$ -Trimethyl-tricarballic acid.** $C_9H_{14}O_6 = CO_2H.CHMe.CH(CO_2H).CMe_2.CO_2H$. $k_A \times 10^4$ at 25° = 1.44; increases on diln. $\mu(27) = 21.5$, (216) = 59.5; m. p. 133°-134°; **813**. [Same acid?] $k = 1.4$; in-

creases on diln. $\mu(32)=21.4$, $(1024)=111.4$, $(\infty)=350$;
m. p. 139° – 140° ; **444**.

???-Trimethyl-tricarballic acid. $C_9H_{14}O_6$.

$k_A \times 10^4$ at $25^{\circ}=2.6$; slight increase on diln.; m. p. 135° – 136° .

$\mu(64)=41.9$, $(1024)=139.8$, $(\infty)=350$; **444**.

Trimethyl-xanthine see Caffeine.

2,4,6-Trinitro-aniline. (Picramide).

$C_6H_4O_6N_3=(NO_2)_3C_6H_2.NH_2$. $[NH_2=1.]$

In NH_3 ; **604**, **610**. In $MeNH_2$, good cond.; **637**.

1,3,5-Trinitro-benzene. $C_6H_3O_6N_3=C_6H_3(NO_2)_3$.

In aq., no cond.; **771**. In NH_3 ; **610**. In pyridine; **754**.

Trinitro-benzoic acid. $C_7H_3O_8N_3=(NO_2)_3C_6H_2.CO_2H$.

Na.A, cond. with NaOH; **766**.

Trinitro-methane. (Nitroform). $CHO_3N_3=CH(NO_2)_3$.

At 25° , $\mu(32)=327$, $(512)=351.2$; **772**; **782**.

In Et alc.; **782**. In pyridine; **754**.

Hg.2A; **1064**, **1094**. – K.A; **753**, **772**. – Na.A at 25° , $\Lambda(32)=80.2$, $(64)=83.0$; **772**. Pyridine salt [?]; **753**.

2,4,6-Trinitro-phenol. (Picric acid).

$C_6H_3O_7N_3=(NO_2)_3C_6H_2.OH$. $[OH=1.]$

$k_A \times 10$ at $18^{\circ}=1.6$ (part.); **1536**. =2; diminishes on diln.; **460**.

At $25^{\circ}=2.3$; diminishes on diln.; **1536**, **680**.

At 0° , $\Lambda(33.3)=219.8$, $(100)=229.5$; **680**. At 18° , $\Lambda(25)=309.9$, $(1600)=351.2$; **976a**. At 25° , $\Lambda(32)=340.1$, $(1024)=370.4$, $(\infty)=387$; **1536**; – **70**, **402**, **1042**, **1071**, **1366**, **1508**, **1579**, **1718**. At 0° – 25° ; **680**. At 0° – 35° ; **911**. At 18° and 80° ; **1800**. At 18° and 90° ; **1796**.

In HBr, no cond.; **1897**. In HCN, no cond.; **943**. In H_2S , no cond.; **27**. In H_2SO_4 , no cond.; **750**. In N_2O_4 , no cond.; **297**, **602**. In SO_2 , no cond.; **1842**. In NH_3 , qual.; **606**. In $MeNH_2$, good cond.; **637**. In alcohols; **654**, **754**, **1071**, **1579**, **1580**, **1800**. In benzene, no cond.; **941**, **1800**, **1802**. In ether, very small cond.; **1071**, **1580**, **1800**. In EtBr, no cond.; **1437**. In piperidine and pyridine; **754**.

Cond. with acids; **1800**. With bases; **1508**, **1718**. With bases in benzene, no cond.; **1802**. With dimethyl-pyrone; **1827**. With naphthol; **1042**, **1842**. With naphthalene, in SO_2 ; **1842**.

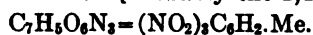
$NH_4.A$ in SO_2 ; **1842**. – Mg.2A; **1836**. – K.A; **976a**. In H_2S , no cond.; **27**. In SO_2 ; **1842**. In pyridine; **753**. – Na.A at 25° , $\Lambda(32)=72.8$, $(1024)=82.6$; **1536**; **402**, **495**, **680**, **1366**. – $UO_2.2A$; **449**. – Salts of organic bases; **402**, **405**, **753**, **754**. Organic salts in benzene, no cond.; **1802**.

2,4,6-Trinitro-resorcinol. (Styphnic acid. 2,4,6-Trinitro-1,3-dihydroxy-benzene). $C_6H_3O_8N_3=(NO_2)_3C_6H(OH)_2$. $[OH=1,3.]$

At 25°, $\mu(101.4) = 333.2$, $(811.2) = 349.7$, $(\infty) = 351$; **70**.

Cond. alone and with NaOH; **1508**, **1718**.

Trinitro-toluene. [Probably the 2,4,6- compound.]



In NH_3 ; **607**. In pyridine; **754**.

Cond. with NaOH and HCl showing existence of a nitro-acid; **766**. The compound with Me alc. described in **766** has no existence; **771**.

Trioxy- see **Trihydroxy-**

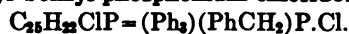
Triphenyl amine. $\text{C}_{18}\text{H}_{15}\text{N} = \text{Ph}_3\text{N}$.

In SO_2 , no cond.; **1842**.

Triphenyl arsine. $\text{C}_{18}\text{H}_{15}\text{As} = \text{Ph}_3\text{As}$.

In SO_2 , no cond.; **1842**.

Triphenyl-benzyl phosphonium chloride.



At 25°, $\Lambda(32) = 78.3$, $(1024) = 89.3$; **270**.

Triphenyl-bromomethane. $\text{C}_{19}\text{H}_{15}\text{Br} = \text{Ph}_3\text{CBr}$.

In SO_2 ; m. p. 152°; **669**, **1829**, **1842**. In acetone, conducts—probably from decomposition; **767a**. In pyridine; **767a**, **1250**.

Triphenyl carbinol. $\text{C}_{19}\text{H}_{16}\text{O} = \text{Ph}_3\text{C.OH}$.

Comparative strength (colorim.); **74**.

In SO_2 ; m. p. 159°; **1829**, **1842**.

Perchlorate = $\text{C}_{19}\text{H}_{15}\text{ClO}_4$; m. p. 150°. In ethylene-chloride, conducts. In tetrachloro-ethane; **840**.

Salts, see Triphenyl-bromomethane, etc.

Triphenyl-chloromethane. $\text{C}_{19}\text{H}_{15}\text{Cl} = \text{Ph}_3\text{CCl}$.

In SO_2 ; **669**, **1676**; m. p. 105°–109°; **1829**, **1842**. In organic solvents; **73**, **668**, **669**, **767a**, **840**.

Triphenyl-iodomethane. $\text{C}_{19}\text{H}_{15}\text{I} = \text{Ph}_3\text{CI}$.

In SO_2 ; **1842**.

Triphenyl-methane. $\text{C}_{19}\text{H}_{16} = \text{Ph}_3\text{CH}$.

In SO_2 ; **669**. In MeNH_2 , no cond.; **637**.

Triphenyl-methyl. $\text{C}_{19}\text{H}_{15} = \text{Ph}_3\text{C}$.

Molecular weight determinations show this to have the formula of hexaphenyl-ethane $(\text{Ph}_2\text{C})_2$.

In SO_2 ; m. p. about 145°–147°; **671**; the values in **671** are 10–15% too low; **673**, **1842**. $(\text{Ph}_2\text{C})_2\text{SO}_4$ in SO_2 ; **672**. – Perchlorate in ethylene chloride; **840**.

The halogen salts are variously regarded as separate compounds or as identical with the triphenyl halogen-methane compounds. See Triphenyl-bromomethane etc.

Triphenyl-methyl acetic acid ethyl ester.

In SO_2 , no cond. till decomposed; **1842**. Gomberg (Ber. Deutsch. Chem. Ges. 34, 2729) says that this is simply an addition product.

Triphenyl-methyl peroxide. $\text{C}_{28}\text{H}_{28}\text{O}_2 = (\text{Ph}_3\text{C})_2\text{O}_2$.

In SO_2 , no cond. until after standing some time; **1842**.

Triphenyl-methyl pyridinium hydroxide. (Triphenyl-methyl pyridonium hydroxide). $\text{C}_{24}\text{H}_{21}\text{ON}$.

B.Br(=Ph₃C.NBr.C₆H₅) in pyridine; **767a**, **1250**.

Triphenyl phosphine. $\text{C}_{18}\text{H}_{15}\text{P} = \text{Ph}_3\text{P}$.

In SO_2 ; **1842**, **1855**. Compound with MeI in SO_2 ; **1855**.

Triphenyl-p-rosaniline trisulphonic acid see **Helvetia Blue** and **Spirit Blue**.**Triphenyl stibine.** $\text{C}_{18}\text{H}_{15}\text{Sb} = \text{Ph}_3\text{Sb}$.

In SO_2 ; **1842**.

Triphenyl-trimesic acid see **Phenyl-naphthalene-dicarboxylic acid**.**Tripropyl amine.** $\text{C}_9\text{H}_{21}\text{N} = \text{Pr}_3\text{N}$.

$k_B \times 10^4$ at $25^\circ = 5.9$ aq.; about 16% too high; diminishes on diln.

$\Lambda(209) = 56.8$, $(\infty) = 193$; **271**.

Cond. with allyl thiocarbimide; **1223**.

B.HCl at 25° , $\Lambda(32) = 81.2$, $(1024) = 93.0$; **270**.

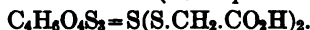
Tristearin see **Stearic acid glyceryl ester**.**Trisulphide-acetic acid** see **Trithio-diacetic acid**.**Trisulphimide.** (Sulphimide). $\text{H}_3\text{O}_6\text{N}_2\text{S} = (\text{SO}_2\text{NH})_3$. [The references to this are incomplete.]

$\mu(69.3) = 709.2$; m. p. about 165° ; **761**.

Trithio-carbondiglycollic acid. (Thiocarbonyl-di-thioglycollic acid).

$k_A \times 10^3$ at $25^\circ = 2.6$; increases on diln.

$\mu(100) = 148.9$, $(400) = 258.7$, $(\infty) = 378$; **853**.

Trithio-diacetic acid. (Trisulphide-acetic acid).

$k_A \times 10^3$ at $25^\circ = 1.04$; increases on diln.; m. p. 123.5° – 124° .

$\mu(48) = 75.5$, $(768) = 244.6$, $(\infty) = 378$; **851**.

 α -Trithio-dilactylic acid. $\text{C}_6\text{H}_{10}\text{O}_4\text{S}_2 = \text{S}(\text{S} \cdot \text{CHMe} \cdot \text{CO}_2\text{H})_2$.

$k_A \times 10^4$ at $25^\circ = 8.1$; increases on diln.

$\mu(32) = 52.2$, $(1024) = 224.5$, $(\infty) = 356$; **1133**.

Tri-thio-formaldehyde. (Trimethylene-sulphide). $\text{C}_3\text{H}_6\text{S}_2 = (\text{HCSH})_2$.

In HI, poor cond. In H_2S , no cond.; **1897**.

Tri-p-tolyl bromomethane. $\text{C}_{22}\text{H}_{21}\text{Br} = (\text{MeC}_6\text{H}_4)_3\text{CBr}$.

In SO_2 , qual. In benzonitrile; m. p. 165° ; **1733**.

Tri-p-tolyl carbinol. $C_{22}H_{22}O$.

Salts; see the preceding and the following compound.

Tri-p-tolyl chloromethane. $C_{22}H_{21}Cl = (MeC_6H_4)_3CCl$.

In acetone, conducts; **1329**. In SO_2 , qual. In benzonitrile;
m. p. **173°**; **1733**.

Tropaeolin see **p-Dimethyl-aminoazobenzene sulphonic acid**.

Tropanol see **Tropine**.

Tropic acid. $C_8H_{10}O_4N$.

$k_A \times 10^4$ at $25^\circ = 4.4$; increases, then diminishes on diln. $\mu(32) = 40.6$, (256) = 106, (1024) = 176.7, $(\infty) = 374$; **1979**.

Tropic acid. (Tropinic acid). $C_9H_{10}O_3 = Ph.CH(CH_2OH).CO_2H$.

$k_A \times 10^5$ at $25^\circ = 7.5$; **1371**; = 7.9 aq.; m. p. $117^\circ - 118^\circ$; **1186**. In both measurements k increases, then diminishes on diln.

At 25° , $\Lambda(64) = 23.6$, (1024) = 83.9, $(\infty) = 352$; **1371**.

Cond. with boric acid; **1186**.

Na.A at 25° , $\Lambda(32) = 64.0$, (1024) = 73.6; **1368a**.

Tropine. (Tropanol). $C_8H_{10}ON$.

$k_A \times 10^{14}$ at 25° is not over 1 (hydrol.); **1145a**.

$k_B \times 10^4$ at $10^\circ = 1.87$; **1145a**. At $18^\circ = 0.00002$ (colorim.); **1778**.

At $25^\circ = 2.74$. At $50^\circ = 3.89$; m. p. 63° ; **1145a**.

At 25° , $\Lambda(31.2) = 20.1$, (91.5) = 33.3, $(\infty) = 227$.

Cond. with NaOH.

B.HCl at 25° , $\Lambda(328.5) = 101.8$, (656.9) = 103.0; **1145a**.

Tropinic acid see **Tropic acid**.

α -Truxillic acid. (γ -*iso*-Atropic acid). $C_{13}H_{16}O_4 = C_{16}H_{14}(CO_2H)_2$.

$k_A \times 10^5$ at $25^\circ = 5$.

$\mu(4332) = 144.5$, $(\infty) = 350$.

2Na.A at 25° , $\mu(32) = 65.3$, (1024) = 81.9; **70**.

γ -Truxillic acid. (ϵ -*iso*-Atropic acid). $C_{13}H_{16}O_4$.

$k_A \times 10^4$ at $25^\circ = 1.1$; diminishes on diln.

$\mu(570) = 81.6$, (1140) = 111.9, $(\infty) = 350$.

2Na.A at 25° , $\mu(32) = 65.3$, (1024) = 82.9; **70**.

Trypsinfibrinpeptone see **Antipeptone**.

Tungsten.

Complex salts containing tungsten; **692**, **1515**, **1516**.

Turpentine; also **Essence of Turpentine**, and **Oil of Turpentine**.

[The references to this are incomplete.]

κ ; **1010**. κ of thin layer; **301**. Effect of radium on κ ; **1491**.

Tyrosine see **Hydroxyphenyl-aminopropionic acid**.

U.

Umbellic acid. (2,4-Dihydroxy-cinnamic acid).

$C_9H_8O_4 = (OH)_2C_6H_3.CH:CH.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 1.9$; diminishes on diln.

$\mu(128) = 16.9$, $(1024) = 44.9$, $(\infty) = 352$; **1371**.

Uramil see **Aminobarbituric acid**.

Urea. (Carbamic acid amide. Carbamide). $\text{CH}_3\text{ON}_2 = \text{CO}(\text{NH}_2)_2$.

$k_B \times 10^{14}$ at $0^\circ = 0.67$ (hydrol.); **2011**. At $25^\circ = 1.5$ (catal.); **1890**; (hydrol.); **553**; $= 1.2$ – 1.5 (hydrol.); $= 1.6$ and 3.4 (inversion); **2011**. At $40.2^\circ = 3.7$ (catal.); **1995**. At $60^\circ = 31$ (hydrol.); **1890** and **1150**. Relative basicity in alc.; **1051**.

At 25° , $\mu(32) = 0.07$, $(256) = 0.26$; **1748**. Cond. too small to measure; **149**, **552**, **553**, **1983**.

In HBr and HI , good cond.; in H_2S , no cond.; **1897**. In HCN , no cond.; **943**. In H_2SO_4 ; **750**. In NH_3 , small cond.; **606**, **610**. In NH_4OH ; **650**. In MeNH_2 , small cond.; **637**.

Cond. with inorg. acids; **553**, **781**, **1984**, **2011**. With inorg. bases; **553**. With NaOH , $\mu(32) = 213$; $M(32) = 211$; **1984**. With inorg. salts; **553**, **748**, **1097**, **1983**. With organic compounds; **1289b**, **1747**, **1748**.

B.HCl at 25° , $\mu(50) = 368.6$; **1864**; $M(32) = 369$; **1984**; – **1791**, **2011**. – B.HNO_3 , in NH_3 , qual.; **606**. – $\text{B.H}_2\text{SO}_4$; **1864**. – B.Acetate ; **145a**, **1791**. – B.Oxalate ; **1748**. – Salts; e. m. f.; **149**, **963**. – Complex salts; **1944**.

Urethane see **Carbamic acid ethyl ester**.

Uric acid. (2,6,8-Trioxypurine). $\text{C}_5\text{H}_4\text{O}_3\text{N}_4$.

$k_A \times 10^6$ at $18^\circ = 1.5$; **825**. At $37^\circ = 2.3$; **695**.

At 18° , $\mu(6640) = 32.2$, $(\infty) = 339$; **825**. At 37° ; **695**.

In NH_3 , qual.; **606**.

NH_4A ; **696**. – Hg_2A , e. m. f.; **963**. – K.A ; **696**, **825**. – Na.A at 18° , $\mu(2359) = 64.2$; **825**; **696**.

Urine. [The references to this are incomplete.]

Cond.; **218**, **251**, **252**, **253**, **257**, **307**, **310b**, **458**, **703**, **1768**. Concentration of H and OH ions; **587**, **1498**.

Uroferrinic acid. $\text{C}_{35}\text{H}_{56}\text{O}_{19}\text{N}_8\text{S}$.

Cond. shows it to be one-fifth dissociated in aq. [No data given.]; **1721**.

sym.-Uvic acid. (Methyl-m-phthalic acid).

$\text{C}_9\text{H}_8\text{O}_4 = \text{Me.C}_6\text{H}_3(\text{CO}_2\text{H})_2$. [$\text{Me} = 1$; $\text{CO}_2\text{H} = 3.5$.]

$k_A \times 10^4$ at $25^\circ = 3$; **175**.

Second $k_A \times 10^5 = 5.3?$ (cond.); **1911**.

At 25° , $\mu(241.4) = 83.6$, $(965.4) = 158.8$, $(\infty) = 353$; **175**.

V.

Valeramide see **Valeric acid amide**.

Valerianic acid see **Valeric acid**.

Valeric acid. (Propylacetic acid. Valerianic acid).



α is extremely small; 517.

$k_A \times 10^5$ at $10^\circ = 1.84$; 875. At $18^\circ = 1.6$; increases on diln.; 93; $= 1.8$ (colorim.); 1563; 1643, 1781. At $20^\circ = 1.77$; 875. At $25^\circ = 1.6$; 180, 461; $= 1.61$; aq. used for soln. was not pure. 1370; $= 1.5$; 601. At $30^\circ = 1.67$. At $40^\circ = 1.55$; 875.

Cond. at $14^\circ - 50^\circ$; 875. At 18° ; 93. At 25° , $\Lambda(32) = 7.7$, (1024) = 42.6, $(\infty) = 354$; 180.

In NH_3 , qual.; 606.

Cond. not increased by boric acid; 1184. With organic acids; 93.

Fe.2A, in NH_3 , qual.; 606. - Li.A; 1367. - Mg.2A; 1836. - K.A; 1367. - Na.A at 25° , $\Lambda(32) = 65.6$, (1024) = 75.4; 1368a, 601; - 1367. At 18° ; 93. At $10^\circ - 50^\circ$; 875. Cond. with acetic acid; 93, 1993, 1994. - Zn.2A in ether, almost no cond.; 366.

Valeric acid amide. (Valeramide). $\text{C}_5\text{H}_{11}\text{ON} = \text{C}_4\text{H}_9 \cdot \text{CO} \cdot \text{NH}_2$.

Cond. with NaOH ; 412.

Valeric acid amyl ester. $\text{C}_{10}\text{H}_{20}\text{O}_2 = \text{C}_4\text{H}_9 \cdot \text{CO}_2 \cdot \text{C}_5\text{H}_{11}$.

In NH_3 , qual.; 606.

Effect of temperature on cond.; 106.

Valeric acid iso-butyl ester. $\text{C}_9\text{H}_{18}\text{O}_2 = \text{C}_4\text{H}_9 \cdot \text{CO}_2 \cdot \text{C}_4\text{H}_9$.

In NH_3 , qual.; 606.

Effect of temperature on cond.; 106.

Valeric acid ethyl ester. $\text{C}_7\text{H}_{14}\text{O}_2 = \text{C}_4\text{H}_9 \cdot \text{CO}_2 \cdot \text{Et}$.

In NH_3 , qual.; 606.

Effect of temperature on cond.; 106.

Valeric acid methyl ester. $\text{C}_6\text{H}_{12}\text{O}_2$.

Effect of temperature on cond.; 106.

Valeric acid propyl ester. $\text{C}_8\text{H}_{16}\text{O}_2$.

Effect of temperature on cond.; 106.

iso-Valeric acid. $\text{C}_5\text{H}_{10}\text{O}_2 = \text{Me}_2\text{CH} \cdot \text{CH}_2 \cdot \text{CO}_2\text{H}$.

$k_A \times 10^5$ at $25^\circ = 1.7$; 180, 601; $= 1.8$; 461. [The acids measured are of doubtful purity.]

At 25° , $\Lambda(32) = 8.3$, (1024) = 44.1, $(\infty) = 354$; 180.

In HBr ; 30.

Ag.A; 1537. - Na.A at 25° , $\Lambda(32) = 65.6$, (1024) = 74.4; 601. At $25^\circ - 60^\circ$; 1537.

iso-Valeric acid amide. (iso-Valeramide). $\text{C}_5\text{H}_{11}\text{ON}$.

Cond. with HCl ; 410.

iso-Valeric acid cyanoamide. (iso-Valerylcynoamide).



$k_A \times 10^4$ at $25^\circ = 1.4$.

$\Lambda(43.2) = 26$, $(1382.4) = 123.4$, $(\infty) = 350$; **70**.

Valeric aldehyde. $C_5H_{10}O = Me.(CH_2)_3.CHO$.

In NH_3 , qual.; **606**.

iso-Valeric aldehyde. $C_5H_{10}O = Me_2CH.CH_2.CHO$.

$\kappa \times 10^5$ at $0^\circ = 7.94$. At $25^\circ = 9.94$; b. p. $92.5^\circ - 93^\circ$; **1843**, **1844**.

Cond. as solvent of NEt_4I ; **1844**.

Valeronitrile. (Butyl cyanide). $C_5H_9N = Me.(CH_2)_3.CN$.

$\kappa \times 10^5$ at $25^\circ = 5.4$.

Cond. with Cu oleate; and as solvent; **1569**.

iso-Valerylcyano- see also **Cyano-iso-valeryl-**

iso-Valerylcyanoamide see **iso-Valeric acid amide**.

Vanadium.

In complex salts; **1515**, **1516**.

Vanillic acid. (4-Hydroxy-3-methoxy-benzoic acid).

$C_8H_8O_4 = MeO.C_6H_3(OH).CO_2H$.

$k_A \times 10^5$ at $18^\circ = 4.2$ (colorim.); **1563**. At $25^\circ = 2.98$; **1371**; -3.4 , aq., not perfectly pure; **1186**.

At 25° , $\Lambda(64) = 15.0$, $(256) = 29.5$, $(1024) = 56.7$, $(\infty) = 354$; **1371**.

In Et alc.; **1508**, **1718**.

Cond. with boric acid; **1186**. Cond. with NaOH; **1508**, **1718**.

iso-Vanillic acid. (3-Hydroxy-4-methoxy-benzoic acid). $C_8H_8O_4$.

$k_A \times 10^5$ at $25^\circ = 3.23$; diminishes on diln.

$\Lambda(256) = 30.8$, $(1024) = 57.9$, $(\infty) = 354$; **1371**.

Vanillin. (Protocatechuic aldehyde methyl ether).

$C_8H_8O_3 = MeO.C_6H_3(OH).CHO$. [$CHO = 1$; $OH = 4$; $MeO = 3$.]

$k_A \times 10^5$ at $25^\circ = 4.8$; m. p. 80° ; **643**.

At 25° , $\Lambda(128) = 8.7$, $(1024) = 24.0$, $(\infty) = 354$; **643**.

In NH_3 , qual.; **606**. In Et alc.; **1508**, **1718**.

Cond. with NaOH; **1508**, **1718**.

Vaseline. [The references to this are incomplete.]

Effect of radium on cond.; **215**, **834**, **1491**.

Veratric acid. (3,4-Dimethoxy-benzoic acid).

$C_9H_{10}O_4 = (MeO)_2C_6H_3.CO_2H$.

$k_A \times 10^5$ at $18^\circ = 5.4$ (colorim.); **1563**. At $25^\circ = 3.63$; diminishes on diln.; **1371**.

At 25° , $\Lambda(256) = 32.5$, $(1024) = 61.8$, $(\infty) = 352$; **1371**.

Veratrine. $C_{26}H_{48}O_8N$.

In HCN, fair cond.; **943**.

Veronal see **Diethyl-barbituric acid**.

Vinaconic acid see **Trimethylene-dicarboxylic acid**.

Vinylacetic acid. $C_4H_5O_2 = CH_2:CH.CH_2.CO_2H$.

$k_A \times 10^5$ at $25^\circ = 3.8$; b. p. 163° ; **571**, **564**; -4.7 ; **2026**; -5.1 ; **573**, corrected in **571**.

$\Lambda(32)=13.2$, $(1024)=68.9$, $(\infty)=383$; **571**. $\Lambda(36.8)=14.3$, $(\infty)=352$; **2026**.

Na.A at 25° , $\Lambda(32)=75.8$, $(1024)=88.1$; **573**.

Vinylglycollic acid see **Ethenylglycollic acid**.

Vinyltrimethyl ammonium hydroxide. (Neurine).



At 25° , $\Lambda(32)=205.6$, $(512)=207.3$; aq. used for soln. was not pure; **1363**.

B.Cl at 25° , $\Lambda(32)=97.3$, $(1024)=109.6$; **270**.

Violuric acid. $\text{C}_4\text{H}_2\text{O}_4\text{N}_2$.

$k_{\text{A}} \times 10^5$ at $0^\circ=1.44$; **701**. At $18^\circ=2.6$ (hydrol.); **513**. [At $18^\circ?$] $=2.72$; **1190**. At $25^\circ=2.73$; **701**. At $35.5^\circ=3.33$; **701**.

Cond. at 0° , $\mu(32)=4.7$; **701**. [At $18^\circ?$,] $\mu(32)=10.3$, $(512)=39.2$, $(\infty)=355$; **1190**; qual.; **1819**; - **782**. At $0^\circ-54.1^\circ$; **701**.

In Et alc.; **754**, **782**. In pyridine, too insol. to measure; **754**.

Cond. with aniline; **513**.

K.A at 18° , $\mu(40)=73.6$, $(1280)=83.0$; **1190**.

Violuric acid methyl ester. $\text{C}_5\text{H}_5\text{O}_4\text{N}_2$.

$k_{\text{A}} \times 10^7$ at $25^\circ=1.85$; diminishes on diln.; m. p. 268° .

At 25° , $\Lambda(256)=2.41$, $(1024)=4.76$; **762**.

W.

Water. H_2O . [The references to this are incomplete.] The ionization constant is really the product of the concentration of the ions, $C_{\text{OH}} \times C_{\text{H}} = k_{\text{w}}$.

$k_{\text{w}} \times 10^{14}$ at										
0°	10°	15°	18°	25°	40°	50°	100°	156°	218°	306°
0.12	0.28		0.59	1.04		5.66	58.2			¹
0.09			0.46	0.82			48	223	461	168 ²
0.12	0.31	0.46	0.62	1.05	2.94	5.17				³

¹ 819 from **999**. ² **1341** and **949**. ³ **1144**.

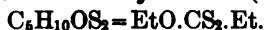
See also; **46**, **269**, **822**, **1043**, **1115**, **1129**, **1259**, **1315**, **1376**, **1777**.

X.

Xanthic acid. (Ethylxanthogenic acid). $\text{C}_5\text{H}_6\text{OS}_2=\text{EtO}.\text{CS}.\text{SH}$.

K.A, with inorg. salts; e. m. f.; **149**.

Xanthic acid ethyl ester. (Ethyl xanthogenate).



$\alpha \times 10^8$ at 25° is less than 2; b. p. $194^\circ-196^\circ$ @ 742.8 mm.

Cond. with AgNO_3 and organic compounds; **1388**.

Xanthine. (2,6-Dioxy-purine). $C_5H_4O_2N_4$.

$k_A \times 10^{10}$ at $40.1^\circ = 1.2$ (solub.); 1997.

$k_B \times 10^{14}$ at $40.1^\circ = 4.6$ (catal.); 1995; $= 6.1$ (solub.); 1997.

p-Xanthine see 1,7-Dimethyl-2,6-dioxy-purine.

Xanthogen amide see Thiocarbamic acid ethyl ester.

Xanthoquinic acid see Quininic acid.

o-Xylene. $C_8H_{10} = C_6H_4.Me_2$.

In NH_3 , qual.; 606.

m-Xylene. C_8H_{10} .

$\kappa \times 10^9$ at $18^\circ = 1.3$; 386.

In NH_3 , qual.; 606. In $MeNH_2$, no cond.; 637.

κ with organic compounds; 386. The following articles do not state which xylene was used. κ ; 305, 1010, 1388. Cond. with other compounds; 1388, 1900. Effect of radium on cond.; 2031.

p-Xylene. C_8H_{10} .

In NH_3 , qual.; 606.

m-Xylenesulphone-aminoacetic acid. (m-Xylenesulphone-glycine).

$C_{10}H_{13}O_4NS = CO_2H.CH_2.NH.SO_2.C_6H_5$. [Me=1,3; $SO_2=4$.]

$k_A \times 10^4$ [at 25°] = 2.70. $\Lambda(72) = 45.2$, $(575.6) = 112.2$, $(\infty) = 348$; 1134.

m-Xylenesulphone-aminopropionic acid. (m-Xylenesulphone-alanine).

$C_{11}H_{15}O_4NS = CO_2H.C_2H_4.NH.SO_2.C_6H_5$.

$k_A \times 10^4$ [at 25°] = 2.43. $\Lambda(134.6) = 57.4$, $(1076.5) = 137.8$, $(\infty) = 347$; 1134.

o-Xylene-?-sulphonic acid. $C_8H_{10}O_3S$.

Na.A in NH_3 , qual.; 606.

1,4-Xylene-1-sulphonic acid see p-Tolubenzyl sulphonic acid.

1,4-Xylene-2-sulphonic acid.

$C_8H_{10}O_3S = Me_2.C_6H_3.SO_3H$. [Me=1,4; $SO_3H=2$.]

$k_A \times 10$ at 25° is about 1.5. $\Lambda(64) = 347.7$, $(\infty) = 350$.

Na.A at 25° , $\Lambda(32) = 61.3$, $(1024) = 72.6$; 423.

1,3-Xylenol(4). (1,3-Dimethyl-4-hydroxy-benzene).

$C_8H_{10}O = Me_2.C_6H_3.OH$.

$k_A \times 10^8$ at 25° is about 3.5. $\Lambda(72) = 0.18$, $(288) = 0.93$, $(\infty) = 355$; 70.

Xylenolcarboxylic acid see p-Xyletic acid.

p-Xyletic acid. (2-Hydroxy-1,4-xylenecarboxylic acid).

$C_8H_{10}O_3 = Me_2.C_6H_3(OH).CO_2H$. [Me=1,4; $CO_2H=3$.]

$k_A \times 10^4$ at $25^\circ = 6$ aq. $\Lambda(600) = 158$, $(1200) = 196$, $(\infty) = 350$.

Cond. with boric acid; 1186.

m-Xylic acid see 2,4-Dimethyl-benzoic acid.

p-Xylic acid see 2,5-Dimethyl-benzoic acid.

asym.-m-Xylidine. (4-Amino-1,3-xylene).

$C_8H_{11}N = Me_2.C_6H_4.NH_2$. [Me=1,3.]

$k_B \times 10^{10}$ at $15^\circ = 6.3$ (colorim.); 1777.

In NH_3 , qual.; 606.

B.HCl at 25° , $\Lambda(64) = 89.9$, (256) = 94.4; 270.

p-Xylidine. (2-Amino-1,4-xylene). $C_8H_{11}N$. [Me=1,4.]

$k_B \times 10^{10}$ at $20^\circ = 9.6$ (colorim.); 1777.

Xylidine. $C_8H_{11}N$.

[No statement as to which was used. The preceding xylidines are the common isomers.]

In HCN, no cond.; 943. In benzene, alone and with picric acid, no cond.; 1802.

Cond. with pyridine and acetic acid; 1388.

1,4,2-Xylidine-5-sulphonic acid. (1,4-Dimethyl-2-amino-benzene-5-sulphonic acid). $C_8H_{11}O_2NS = Me_2.C_6H_3(NH_2).SO_3H$.

[Me=1,4; $NH_2=2$.]

$k_A \times 10^4$ at $25^\circ = 4.4$. $\Lambda(64) = 55.4$, (1024) = 170.1, (∞) = 354; 1372.

Xylyl sulphonic acid see **p-Tolubenzyl sulphonic acid**.

Z.

Zinc.

In complex salts; 1384, 1946.

See also the following compound.

Zinc cyanic acid. $C_4H_2N_4Zn = H_2Zn(CN)_4$.

2K.A at 25° , $\Lambda(32) = 117.5$, (1024) = 132.4; 1832; 1485.

Zirconium.

In complex salts; 1520, 1643.

$C_{29}H_{37}N_3$.

A dye-base analogous to the triphenyl-methane bases.

B.3HCl, cond. alone and with NaOH to show change to a carbinol; 1568.

FORMULA INDEX.

Only the names used in the tables are given here. Synonyms are given in the tables.

Some salts are given, but in general they should be looked for under the head of the acid or base from which they are derived.

1 I.

CCl_4	Tetrachloro-methane.
CS_2	Carbon disulphide.

1 II.

HCN	Hydrocyanic acid.
CHCl_3	Trichloro-methane.
CHBr_3	Tribromo-methane.
CHI_3	Triiodo-methane.
CH_2O	Formaldehyde.
CH_2O_2	Formic acid.
CH_2O_3	Carbonic acid.
CH_3N_3	Cyanoamide.
CH_2N_4	Tetrazole.
CH_3N_5	Aminotetrazole.
CH_3I	Methyl iodide.
CH_4O	Methyl alcohol.
CH_5N	Methyl amine.
CH_5N_3	Guanidine.
CO_2N_4	Tetranitro-methane.
CNI	Cyanogen iodide.

1 III.

CHON	Cyanic acid.
	Fulminic acid.
CHO_2N_3	Trinitro-methane.
CHNS	Thiocyanic acid.
$\text{CH}_2\text{O}_2\text{N}_2$	Dinitro-methane.
CH_3ON	Formic acid amide.
$\text{CH}_3\text{O}_2\text{N}$	Carbamic acid.

$\text{CH}_3\text{O}_2\text{N}$	Formhydroxamic acid. Nitromethane. <i>iso</i> -Nitromethane.
$\text{CH}_3\text{O}_3\text{N}$	Nitric acid methyl ester.
$\text{CH}_3\text{O}_3\text{N}_2$	Nitro-urea.
$\text{CH}_3\text{Br}_3\text{Sn}$	Tin methyl tribromide.
CH_4ON_2	Urea.
$\text{CH}_4\text{O}_2\text{N}_2$	Methylnitroamine.
$\text{CH}_4\text{O}_2\text{N}_4$	Nitroguanidine.
$\text{CH}_4\text{O}_3\text{S}$	Sulphurous acid mono methyl ester.
$\text{CH}_4\text{O}_4\text{S}$	Formaldehyde sulphurous acid. Hydroxy-methane sulphonic acid. Sulphuric acid mono methyl ester.
$\text{CH}_4\text{O}_6\text{S}_2$	Methylene-disulphonic acid.
$\text{CH}_4\text{N}_2\text{S}$	Thiourea.
CH_5ON_3	Semicarbazide.
CH_5ON_5	Diazo guanidine.
$\text{CH}_5\text{O}_2\text{As}$	Methyl arsenic acid.
CO_2NCl_3	Nitro-trichloro-methane.
$\text{CB}_{17}\text{S}_2\text{Al}$	See under Aluminum.

1 IV.

$\text{CHO}_4\text{N}_2\text{Br}$	Dinitro-bromomethane.
$\text{CH}_5\text{O}_2\text{NBr}$	Nitrobromomethane.

2 I.

C_2H_2	Acetylene.
C_2N_2	Cyanogen.

2 II.

$\text{C}_2\text{H}_2\text{O}_2$	Glyoxal.
$\text{C}_2\text{H}_2\text{O}_4$	Oxalic acid.
$\text{C}_2\text{H}_2\text{N}_{10}$	Azotetrazole.
$\text{C}_2\text{H}_2\text{Cl}_4$	Tetrachloro-ethane.
$\text{C}_2\text{H}_3\text{N}$	Acetonitrile.
$\text{C}_2\text{H}_3\text{N}_3$	1,2,4-Triazole.
$\text{C}_2\text{H}_4\text{O}$	Acetaldehyde. Meta-acetaldehyde = $(\text{C}_2\text{H}_4\text{O})_x$. Para-acetaldehyde = $(\text{C}_2\text{H}_4\text{O})_x$.
	Ethylene oxide.
$\text{C}_2\text{H}_4\text{O}_2$	Acetic acid. Formic acid methyl ester.
$\text{C}_2\text{H}_4\text{O}_3$	Glycollic acid.

$C_2H_4O_4$	Glyoxylic acid.
$C_2H_4N_4$	1-Amino-1,3,4-triazole. Dicyano-diamide.
$C_2H_4Cl_2$	Ethylene chloride. Ethylidene chloride.
$C_2H_4Br_2$	Ethylene bromide.
C_2H_5Cl	Ethyl chloride.
C_2H_5Br	Ethyl bromide.
C_2H_5I	Ethyl iodide.
C_2H_5O	Ethyl alcohol.
$C_2H_5O_2$	Ethylene glycol.
C_2H_6S	Dimethyl sulphide. Ethyl mercaptan.
C_2H_7N	Dimethyl-amine. Ethyl amine.
$C_2H_8N_2$	Ethylene diamine.

2 III.

C_2HOCl_3	Chloral. Chloral hydrate.
C_2HOBr_3	Bromal hydrate.
$C_2HO_2Cl_3$	Trichloro-acetic acid.
$C_2HO_2Br_3$	Tribromo-acetic acid.
C_2HN_2Ag	Silver cyanic acid.
$C_2H_5OBr_2$	Bromoacetyl bromide.
$C_2H_5O_2Cl_3$	Dichloro-acetic acid.
$C_2H_5O_2Br_3$	Dibromo-acetic acid.
$C_2H_5O_2F_3$	Diffuoro-acetic acid.
C_2H_5ON	Glycollic nitrile.
C_2H_5OCl	Acetyl chloride.
C_2H_5OBr	Acetyl bromide.
$C_2H_5O_2N_3$	Triazo-acetic acid.
$C_2H_5O_2Cl$	Chloroacetic acid.
$C_2H_5O_2Cl_3$	Chloral hydrate.
$C_2H_5O_2Br$	Bromoacetic acid.
$C_2H_5O_2Br_3$	Bromal hydrate.
$C_2H_5O_2I$	Iodoacetic acid.
$C_2H_5O_2F$	Fluoroacetic acid.
$C_2H_5O_2N$	Oxalic acid mono amide. Oximino-acetic acid.
C_2H_6NS	Methyl thiocarbimide. Thiocyanic acid methyl ester.
$C_2H_4OF_2$	Diffuoro-ethyl alcohol.

C_2H_4OS	Thioacetic acid.
$C_2H_4O_2N_2$	Hydraziaacetic acid.
	Oxalic acid di-amide.
$C_2H_4O_2S$	Thioglycollic acid.
$C_2H_4O_2N_2$	Ethylnitrolic acid.
$C_2H_4O_4N_2$	Dinitro-ethane.
	Oxaldihydroxamic acid.
C_2H_5ON	Acetaldoxime.
	Acetic acid amide.
C_2H_5OCl	Glycol chlorohydrin.
$C_2H_5O_2N$	Acethydroxamic acid.
	Aminoacetic acid.
	Glycollic acid amide.
	Glycoliminohydrin.
	Nitroethane.
	<i>iso</i> -Nitroethane.
	Nitrous acid ethyl ester.
$C_2H_5O_2N_2$	Allophanic acid amide.
$C_2H_5O_2N$	Nitric acid ethyl ester.
$C_2H_5NF_2$	Difluoro-ethyl amine.
C_2H_5ClHg	Mercury ethyl chloride.
$C_2H_5ON_2$	Methyl urea.
	O-Methyl <i>iso</i> -urea.
	Nitrosodimethyl amine.
C_2H_5OHg	Mercury ethyl hydroxide.
$C_2H_5O_2S$	Sulphurous acid mono ethyl ester.
$C_2H_5O_4S$	Acetaldehyde sulphurous acid.
	Isethionic acid.
	Sulphuric acid mono ethyl ester.
	“ “ dimethyl ester.
C_2H_5NBr	2-(β)-Bromoethyl amine.
C_2H_7ON	Acetaldehyde ammonia.
$C_2H_7O_2As$	Cacodylic acid.
$C_2H_7O_4P$	Phosphoric acid mono ethyl ester.
$C_2H_7O_5P$	Phosphoric acid mono glycol ester.
C_2N_2AgK	Potassium silver cyanide.

2 IV.

$C_2HO_2ClBr_2$	Chloro-dibromo-acetic acid.
$C_2HO_2ClF_2$	Chloro-difluoro-acetic acid.
$C_2HO_2Cl_2F$	Dichloro-fluoroacetic acid.
$C_2HO_2Br_2F$	Dibromo-fluoroacetic acid.
$C_2H_2ONCl_3$	Trichloro-acetic acid amide.

C_2H_5OClBr	Chloroacetyl bromide.
C_2H_4ONCl	Acetic acid chloroamide. Chloroacetic acid amide.
C_2H_4ONBr	Acetic acid bromoamide.
$C_2H_4O_2N_2F_2$	Difluoro-ethylnitroamine.
$C_2H_5OC_2P$	Ethoxy phosphorus chloride.
$C_2H_7O_2NS$	Ethyl sulphonic acid amide.
$C_2H_7O_2NS$	Taurine.

2 V.

C_2HO_2ClBrF	Chlorobromofluoroacetic acid.
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3 II.

$C_2H_2N_2$	Malonitrile.
$C_2H_4O_2$	Acrylic acid.
$C_2H_4O_2$	Pyroracemic acid.
$C_2H_4O_4$	Malonic acid.
$C_2H_4O_5$	Tartronic acid.
$C_2H_4O_5$	Mesoxalic acid.
$C_2H_4N_2$	Glyoxaline.
	Pyrazole.
C_2H_5N	Propionitrile.
C_2H_5I	Allyl iodide.
C_2H_6O	Acetone.
	Allyl alcohol.
	Propionic aldehyde.
$C_2H_6O_2$	Acetic acid methyl ester.
	Acetol.
	Formic acid ethyl ester.
	Propionic acid.
$C_2H_6O_3$	Hydracrylic acid.
	Lactic acid.
	Methoxy-acetic acid.
$C_2H_6O_4$	$\alpha\beta$ -Glyceric acid.
$C_2H_6S_3$	Trithio-formaldehyde.
C_2H_7N	Allyl amine.
C_2H_7Br	Propyl bromide.
C_2H_7I	Propyl iodide.
C_2H_5O	Propyl alcohol.
	<i>iso</i> -Propyl alcohol.
$C_2H_5O_2$	Methylal.
	Propylene glycol.
$C_2H_5O_3$	Glycerol.

C_3H_9N	<i>norm.</i> -Propyl amine.
	<i>iso</i> - " "
	Trimethyl amine.
C_3H_9As	Trimethyl arsine.
C_3H_9Sb	Trimethyl stibine.
$C_3H_{10}N_2$	Propylene diamine.
	Trimethylene diamine.

3 III.

$C_3H_5O_3N_2$	Cyanonitrosoacetic acid.
	Parabanic acid.
$C_3H_5N_3Cu$	Cupriccyanic acid.
$C_3H_5O_2N$	Cyanoacetic acid.
$C_3H_5O_2N_2$	Cyanuric acid.
$C_3H_5O_2Cl_3$	Trichloro-lactic acid.
$C_3H_5O_4Cl$	Chloromalonic acid.
C_3H_5NS	Thiazole.
$C_3H_4ON_2$	Acetic acid cyanoamide.
	Cyanoacetic acid amide.
$C_3H_4O_2N_2$	Hydantoin.
$C_3H_4O_2Br_2$	<i>aa</i> -Dibromo-propionic acid.
	<i>αβ</i> - " " "
$C_3H_4O_4N_2$	Dioximino-propionic acid.
	Oxaluric acid.
C_3H_5ON	Lactic acid nitrile.
C_3H_5OCl	Epichlorohydrin.
$C_3H_5O_2N$	<i>iso</i> -Nitrosoacetone.
$C_3H_5O_2N_2$	<i>α</i> -Triazo-propionic acid.
$C_3H_5O_2Cl$	Chloro-formic acid ethyl ester.
	<i>α</i> -Chloropropionic acid.
	<i>β</i> - " "
$C_3H_5O_2Br$	<i>α</i> -Bromopropionic acid.
	<i>β</i> - " "
$C_3H_5O_2I$	<i>β</i> -Iodopropionic acid.
$C_3H_5O_2N$	Nitroacetone.
	<i>α</i> -Oximino-propionic acid.
	<i>β</i> - " " "
$C_3H_5O_4N$	Aminomalonic acid.
	<i>β</i> -Nitropropionic acid.
$C_3H_5O_4N_2$	Nitromalonic acid amide.
C_3H_5NS	Ethyl thiocarbimide.
	Thiocyanic acid ethyl ester.
$C_3H_5ON_2$	Ethylene urea.

$C_2H_5OCl_2$	Dichloro-hydrin.
$C_2H_5OS_2$	Xanthic acid.
$C_2H_5O_2N_2$	Malonic acid di-amide.
$C_2H_5O_2N_2$	<i>anti</i> -Diazo urethane.
$C_2H_5O_4N_2$	Dinitro-propane.
	Malondihydroxamic acid.
	Nitrocarbamic acid ethyl ester.
C_2H_7ON	Acetoxime.
	Propionic acid amide.
$C_2H_7O_2N$	Aminoacetic acid methyl ester.
	α -Aminopropionic acid.
	β - " "
	Carbamic acid ethyl ester.
	Methylamino-acetic acid.
	Nitropropane.
	2-Nitropropane.
	Propionhydroxamic acid.
$C_2H_7O_2N_2$	Guanidineacetic acid.
$C_2H_7O_2Cl$	Chlorohydrin.
$C_2H_7O_2N$	Nitric acid propyl ester.
$C_2H_5ON_2$	Ethyl <i>iso</i> -urea.
$C_2H_5O_2N_2$	2,3-Diamino-propionic acid.
$C_2H_5O_4S$	Sulphuric acid propyl ester.
$C_2H_5O_3B$	Boric acid trimethyl ester.
$C_2H_5O_3P$	Phosphoric acid mono glycerol ester.
$C_2H_5N_2Cl$	β -Chloro-trimethylene diamine.
$C_2H_{10}OS$	Trimethyl sulphonium hydroxide.
$C_2H_{10}OTe$	Trimethyl tellurium hydroxide.
$C_2H_{10}OSn$	Tin trimethyl hydroxide.
$C_2N_2CuNa_2$	Sodium cupricyanide.

3 IV.

$C_2H_2ONCl_3$	Trichloro-lacto nitrile.
$C_2H_2O_2N_2S$	Thioparabanic acid.
$C_2H_2ONS_2$	Rhodanin.
$C_2H_2O_2NS$	Diketo-tetrahydro-thiazole.
	Thiocyanoacetic acid.
$C_2H_2O_2N_2S$	<i>iso</i> -Nitrosothiohydantoin.
$C_2H_4ON_2S$	Thiohydantoin.
$C_2H_4O_2NS_2$	Dithio-carbamine glycollic acid.
$C_2H_5O_2NS$	Carbaminethioglycollic acid.
	Thiocarbamine glycollic acid.
$C_2H_5Br_6S_2Al$	See under Aluminum.

$C_2H_5O_2N_2S$	Ethyl sulphonic acid cyanoamide.
C_2H_7ONS	Thiocarbamic acid ethyl ester.
$C_3H_{10}ONCl$	Trimethyl-hydroxy ammonium chloride.
$C_3H_{10}ONI$	Trimethyl-hydroxy ammonium iodide.
$C_3H_{10}OBrSb$	Trimethyl-stibine hydroxy bromide.

4 II.

C_4HN_3	Cyanoform.
$C_4H_2O_3$	Maleic acid anhydride.
$C_4H_2O_4$	Acetylene-dicarboxylic acid.
	Hydroxy-maleic acid anhydride.
$C_4H_4O_2$	Tetrolic acid.
$C_4H_4O_2$	Succinic acid anhydride.
$C_4H_4O_4$	Fumaric acid.
	Maleic acid.
$C_4H_4O_5$	Hydroxy-fumaric acid.
	Hydroxy-maleic acid.
	Oxalacetic acid is a mixture of the above acids.
$C_4H_4O_6$	Dihydroxy-fumaric acid.
	Dihydroxy-maleic acid.
$C_4H_4N_2$	Ethylene cyanide.
C_4H_4S	Thiophene.
C_4H_5N	Pyrrole.
$C_4H_6O_2$	α -Crotonic acid.
	β - " "
	Methacrylic acid.
	Succin-dialdehyde.
	Trimethylene-carboxylic acid.
	Vinylacetic acid.
$C_4H_6O_3$	Acetic acid anhydride.
	Acetoacetic acid.
	Ethenylglycollic acid.
$C_4H_6O_4$	Methylmalonic acid.
	Oxalic acid dimethyl ester.
	Succinic acid.
	<i>iso</i> -Succinic acid.
$C_4H_6O_5$	Diglycollic acid.
	Malic acid.
	<i>inact.</i> -Malic acid.
$C_4H_6O_6$	d-Tartaric acid.
	l- " "
	<i>inact.</i> -Tartaric acid.
	<i>para</i> -Tartaric acid.

$C_4H_6O_5$	Dihydroxy-tartaric acid.
$C_4H_6N_2$	α -Methyl glyoxaline.
	μ - " "
	N- " "
	N-Methyl pyrazole.
	3- " "
C_4H_7N	Butyro nitrile.
$C_4H_7N_3$	Dimethyl-triazole.
$C_4H_7N_5$	Acetoguanamine.
C_4H_8O	<i>iso</i> -Butyl aldehyde.
	Methylethyl ketone.
$C_4H_8O_2$	Acetic acid ethyl ester.
	Butyric acid.
	<i>iso</i> -Butyric acid.
	Formic acid propyl ester.
	Propionic acid methyl ester.
$C_4H_8O_3$	Ethoxy-acetic acid.
	α -Hydroxy-butyric acid.
	β - " " "
	γ - " " "
	Hydroxy- <i>iso</i> - " "
$C_4H_8N_4$	2,5-Dimethyl-1-amino-1,3,4-triazole.
$C_4H_8Br_2$	Butylene bromide.
	<i>iso</i> -Butylene bromide.
C_4H_9N	Methylenecyclopropane amine.
C_4H_9Br	<i>iso</i> -Butyl bromide.
C_4H_9I	<i>norm.</i> -Butyl iodide.
	<i>iso</i> - " "
	<i>tertiary</i> - " "
$C_4H_{10}O$	<i>norm.</i> -Butyl alcohol.
	<i>iso</i> - " "
	<i>tertiary</i> - " "
	Ethyl ether.
$C_4H_{10}O_4$	Erythrol.
$C_4H_{10}N_2$	Diethylene diamine.
$C_4H_{10}S$	Diethyl sulphide.
$C_4H_{10}Hg$	Mercury diethyl.
$C_4H_{10}Sn$	Tin diethyl.
$C_4H_{11}N$	<i>iso</i> -Butylamine.
	<i>secondary</i> -Butylamine.
	<i>tertiary</i> - " "
	Diethyl-amine.
$C_4H_{12}N_2$	Tetramethylene diamine.
C_4O_4Ni	Nickel carbonyl.

4 III.

$C_4H_2O_4N_2$	Alloxan.
$C_4H_2O_8Fe$	Ferro-oxalic acid.
$C_4H_2N_4Cd$	Cadmium cyanic acid.
$C_4H_2N_4Hg$	Mercury cyanic acid.
$C_4H_2N_4Ni$	Nickel cyanic acid.
$C_4H_2N_4Pd$	Palladium cyanic acid.
$C_4H_2N_4Pt$	Platino cyanic acid.
$C_4H_2N_4Zn$	Zinc cyanic acid.
$C_4H_3O_4N_3$	Nitro-uracil.
	Violuric acid.
$C_4H_3O_4Cl$	Chloromaleic acid.
$C_4H_3O_4Br$	Bromomaleic acid.
$C_4H_3O_5N_3$	Nitrobarbituric acid.
$C_4H_3N_4Cu$	Cuprocyanic acid.
$C_4H_4O_3N_2$	Barbituric acid.
	Cyanonitrosoacetic acid methyl ester.
	Methyloximino- <i>syn</i> -oxazolone.
	Methylparabanic acid.
	Oxyuracil.
$C_4H_4O_4N_2$	Dialuric acid.
$C_4H_4O_4Cl_2$	<i>fum.</i> -2,3-Dichloro-succinic acid.
	<i>mal.</i> -2,3- " " "
$C_4H_4O_4Br_2$	<i>sym.</i> -Dibromo-succinic acid.
	<i>iso</i> - " " "
$C_4H_4O_6N_2$	<i>aa</i> -Dioximino-succinic acid.
	$\beta\beta$ - " " "
$C_4H_5O_2N$	Cyanoacetic acid methyl ester.
	β -Oximinobutyric anhydride.
	Succinimide.
$C_4H_5O_2N_2$	3-Methyl-4- <i>iso</i> -nitrosopyrazolone.
$C_4H_5O_2Cl$	α -Chlorocrotonic acid.
	β - " " "
	α -Chloro- <i>iso</i> -crotonic acid.
	β - " " " "
$C_4H_5O_2Cl_3$	Trichloro-acetic acid ethyl ester.
	<i>aa\beta</i> -Trichloro-butyric acid.
$C_4H_5O_3N_3$	Aminobarbituric acid.
	Methyl-hydroxy-triazole carboxylic acid.
$C_4H_5O_4Cl$	<i>inact.</i> -Chlorosuccinic acid.
	d- " "
	l- " "
$C_4H_5O_4Br$	<i>inact.</i> -Bromosuccinic acid.

$C_4H_5O_4Br$	l-Bromosuccinic Acid.
$C_4H_5O_5N$	α -Oximino-succinic acid.
	β - " " "
C_4H_5NS	Allyl thiocarbimide.
$C_4H_5N_2Cl$	N-Methylchloroglyoxaline.
$C_4H_5OBr_2$	α -Bromobutyryl bromide.
	α -Bromo- <i>iso</i> -butyryl bromide.
$C_4H_5O_2N_2$	Aminoacetic acid anhydride.
	Cyanoaminocarbonic acid ethyl ester.
	Lactic acid cyanoamide.
$C_4H_5O_2Cl_2$	Dichloro-acetic acid ethyl ester.
	$\alpha\beta$ -Dichloro-butyric acid, (fum.).
	$\alpha\beta$ - " " " (mal.).
$C_4H_5O_3N_4$	Allantoin.
$C_4H_5O_4N_2$	<i>syn</i> -Dioximino-butyric acid.
	<i>amphi</i> - " " "
$C_4H_6O_4S$	Thiodiglycollic acid.
	Thiomalic acid.
$C_4H_6O_4S_2$	Di-thioglycollic acid.
$C_4H_6O_4S_2$	Trithio-diacetic acid.
$C_4H_6O_4Se$	Selenium diglycollic acid.
$C_4H_6O_6S$	Sulphonedi-acetic acid.
$C_4H_7ON_3$	Creatinine.
$C_4H_7O_2N$	<i>iso</i> -Nitrosomethylethyl ketone.
$C_4H_7O_2Cl$	Chloroacetic acid ethyl ester.
	α -Chlorobutyric acid.
	β - " "
	γ - " "
$C_4H_7O_2Br$	α -Bromobutyric acid.
	γ - " "
$C_4H_7O_2I$	Iodoacetic acid ethyl ester.
	γ -Iodobutyric acid.
$C_4H_7O_2N$	Acetyl-amino-acetic acid.
	α -Oximino-butyric acid.
	β - " " "
$C_4H_7O_4N$	Aminosuccinic acid.
	Diglycolamic acid.
	Malic acid mono amide.
	Nitroacetic acid ethyl ester.
$C_4H_7O_5P$	Phosphoric acid mono erythran di-ester.
$C_4H_7NF_4$	Tetrafluoro-diethyl amine.
$C_4H_8O_2N_2$	Dimethyl-glyoxime.
	Succinic acid di-amide.
$C_4H_8O_3S$	Ethylthioglycollic acid.

$C_4H_5O_2N_2$	Aminosuccinic acid mono amide. Glycyl-aminoacetic acid.
$C_4H_5O_4N_2$	Dinitro-butane.
$C_4H_5N_2S$	Allylthiourea.
C_4H_9ON	Acetic acid dimethyl amide. Butyric acid amide. <i>iso</i> -Butyric acid amide.
$C_4H_9ON_2$	Acetone semicarbazone.
$C_4H_9O_2N$	Aminoacetic acid ethyl ester. γ -Aminobutyric acid. Butyrhydroxamic acid. Dimethyl-aminoacetic acid. Methylguanidine-acetic acid.
$C_4H_9O_2N_2$	Nitric acid <i>iso</i> -butyl ester.
$C_4H_9O_3N$	Phosphoric acid mono erythran mono ester.
$C_4H_9O_6P$	Ethyl ether bromide.
$C_4H_{10}OBr_3$	Dimethyl thetine.
$C_4H_{10}O_2S$	Ethyl sulphonic acid ethyl ester. Sulphurous acid diethyl ester.
$C_4H_{10}O_4N_2$	Glycoliminohydrin.
$C_4H_{10}O_4S$	Sulphuric acid mono <i>iso</i> -butyl ester. Sulphuric acid diethyl ester.
$C_4H_{10}O_5N_2$	Dinitro-ethane alcoholate.
$C_4H_{10}ClTl$	Thallium diethyl chloride.
$C_4H_{10}I_2Sn$	Tin diethyl diiodide.
$C_4H_{11}OTl$	Thallium diethyl hydroxide.
$C_4H_{11}O_4P$	Phosphoric acid mono <i>iso</i> -butyl ester. " " diethyl ester.
$C_4H_{12}O_4Si$	Silicic acid tetramethyl ester.
$C_4H_{12}ClP$	Tetramethyl phosphonium chloride.
$C_4H_{12}ClAs$	Tetramethyl arsonium chloride.
$C_4H_{12}ClSb$	Tetramethyl stibonium chloride.
$C_4H_{13}ON$	Tetramethyl ammonium hydroxide.
$C_4H_{13}OP$	Tetramethyl phosphonium hydroxide.
$C_4H_{13}OSb$	Tetramethyl stibonium hydroxide.
$C_4H_{13}OAs$	Tetramethyl arsonium hydroxide.
$C_4N_4CdK_3$	Potassium cadmium cyanide.
$C_4N_4CuK_3$	Potassium cuprocyanide.
$C_4N_4CuNa_3$	Sodium cuprocyanide.
$C_4N_4HgK_3$	Potassium mercury cyanide.
$C_4N_4K_2Ni$	Potassium nickel cyanide.
$C_4N_4K_2Pd$	Potassium palladium cyanide.
$C_4N_4K_2Pt$	Potassium platino cyanide.
$C_4N_4K_2Zn$	Potassium zinc cyanide.

4 IV.

$C_4H_5O_2N_2Cl_2$	Dichloro-barbituric acid.
$C_4H_5O_2N_2Br_2$	Dibromo-barbituric acid.
$C_4H_3N_4S_4Co$	Cobaltothiocyanic acid.
$C_4H_3N_4S_4Pd$	Palladium thiocyanic acid.
$C_4H_3N_4S_4Pt$	Platino thiocyanic acid.
$C_4H_4O_4ClBr$	p-Chlorobromosuccinic acid.
$C_4H_5O_2N_2S$	Thionuric acid.
$C_4H_5O_4ClFe$	Ferri-diacetyl chloride.
$C_4H_5O_4Cl_2S$	β -Dichloro-methylsulphonepropionic acid.
$C_4H_5O_4BrFe$	Ferri-diacetyl bromide.
$C_4H_5O_4Br_2S$	β -Dibromo-methylsulphonepropionic acid.
$C_4H_7O_4PF_4$	Phosphoric acid tetrafluoro-diethyl ester.
$C_4H_5N_6S_4Co$	Ammonium cobalt thiocyanate.
$C_4H_{11}NCII$	Trimethyl-iodomethyl ammonium chloride.
$C_4H_{12}ONI$	Trimethyl-iodomethyl ammonium hydroxide.
$C_4N_4S_4K_3Pd$	Potassium palladium thiocyanate.
$C_4N_4S_4K_3Pt$	Potassium platino thiocyanate.

5 I.

C_5H_{10}	<i>norm.</i> -Amylene.
C_5H_{12}	<i>norm.</i> -Pentane.

5 II.

$C_5H_5O_5$	Croconic acid.
$C_5H_4O_2$	Furfurol. /
$C_5H_4O_3$	Citraconic acid anhydride.
	Itaconic acid anhydride.
	Pyromeconic acid.
	Pyromucic acid.
	<i>iso</i> -Pyromucic acid.
C_5H_5N	Pyridine.
$C_5H_5O_2$	Glutaric acid anhydride.
	Pyrotartaric acid anhydride.
	Tetric acid.
$C_5H_5O_4$	Citraconic acid.
	Glutaconic acid.
	Itaconic acid.
	Mesaconic acid.
	Trimethylene-1,1-dicarboxylic acid.
	<i>mal.</i> -Trimethylene-1,2-dicarboxylic acid.
	<i>fum.</i> - " -1,2- " "

$C_5H_6O_6$	Acetone-dicarboxylic acid.
$C_5H_6O_6$	Ethenyl-tricarboxylic acid.
$C_5H_8O_2$	Acetylacetone.
	Allylacetic acid.
	Angelic acid.
	β -Dimethyl-acrylic acid.
	Ethylidenepropionic acid.
	Propylideneacetic acid.
	Tetramethylene-carboxylic acid.
	Tiglic acid.
$C_5H_8O_3$	Acetoacetic acid methyl ester.
	Laevulinic acid.
$C_5H_8O_4$	Dimethyl-malonic acid.
	Ethylmalonic acid.
	Glutaric acid.
	Malonic acid mono ethyl ester.
	“ “ dimethyl “
	Pyrotartaric acid.
	Succinic acid mono methyl ester.
$C_5H_8O_5$	α -Hydroxy-glutaric acid.
$C_5H_8O_5$	Tartaric acid mono methyl ester.
$C_5H_8O_7$	<i>inact.</i> -Trihydroxy-glutaric acid.
	l- “ “ “
	<i>rac.</i> - “ “ “
$C_5H_8O_9$	Leuconic acid.
$C_5H_8N_2$	N-3-Dimethyl pyrazole.
	3,5- “ “
	μ -Ethyl glyoxaline.
	N- “ “
C_5H_9N	Valeronitrile.
$C_5H_{10}O$	Methylpropyl ketone.
	Valeric aldehyde.
	<i>iso</i> -Valeric aldehyde.
$C_5H_{10}O_2$	Acetic acid propyl ester.
	Butyric acid methyl ester.
	Formic acid <i>iso</i> -butyl ester.
	Methylethylacetic acid.
	Propionic acid ethyl ester.
	Trimethyl-acetic acid.
	Valeric acid.
	<i>iso</i> -Valeric acid.
$C_5H_{10}O_3$	Carbonic acid diethyl ester.
	α -Ethoxy-propionic acid.
	Hydroxy-pivalic acid.

$C_5H_{10}O_3$	α -Hydroxy-valeric acid.
	γ - " " "
	Lactic acid ethyl ester.
$C_5H_{10}O_5$	Arabinose.
$C_5H_{11}N$	Piperidine.
$C_5H_{11}Br$	Amyl bromide.
$C_5H_{11}I$	Amyl iodide.
$C_5H_{12}O$	<i>norm.</i> -Amyl alcohol.
	<i>iso</i> - " "
	Dimethyl ethyl carbinol.
$C_5H_{12}S$	<i>iso</i> -Amyl mercaptan.
$C_5H_{12}N$	<i>iso</i> -Amylamine.
	Methyldiethyl-amine.
$C_5H_{14}N_2$	β -Methyltetramethylene diamine.
	Pentamethylene diamine.

5 III.

$C_5HO_3Cl_5$	1,1,3,4,4-Pentachloro-pentadiene-carboxylic acid.
$C_5HO_3Cl_3$	Trichloro-triketo-pentamethylene.
$C_5HO_3Br_3$	Tribromo-triketo-pentamethylene.
$C_5H_2O_3Br$	Bromocitraconic acid anhydride.
$C_5H_2O_3N_3$	Nitro-uracilcarboxylic acid.
$C_5H_4O_2N_4$	Xanthine.
$C_5H_4O_2S$	α -Thiophenecarboxylic acid.
	β - " "
$C_5H_4O_3N_4$	Uric acid.
$C_5H_4O_3Br_2$	Acetyldibromo-acrylic acid.
$C_5H_4O_4N_2$	Methylalloxan.
C_5H_5ON	Oxypyridine.
$C_5H_5ON_5$	Guanine.
$C_5H_5O_2N$	Pyrrole-2-carboxylic acid.
$C_5H_5O_3N$	Cyanoformylacetic acid methyl ester.
$C_5H_5O_2Br$	Bromotetric acid.
$C_5H_5O_4N_3$	Methylnitro-uracil.
	Violuric acid methyl ester.
$C_5H_5O_4Br$	Bromocitraconic acid.
$C_5H_5ON_4$	2-Oxy-1,6-dihydro-purine.
$C_5H_5O_2N_2$	Methyluracil.
$C_5H_5O_2N_2$	Cyanonitrosoacetic acid ethyl ester.
	Dimethyl-parabanic acid.
	Succinic acid mono cyanoamide.
$C_5H_5O_4S_3$	Trithio-carbondiglycollic acid.
$C_5H_5O_5S_2$	Dithio-carbondiglycollic acid.

$C_5H_7ON_2$	Methylimino-uracil.
$C_5H_7O_2N$	Cyanoacetic acid ethyl ester.
$C_5H_7O_2N_2$	Cyanuric acid N-dimethyl ester.
$C_5H_7O_4Br$	Bromopyrotartaric acid.
C_5H_7NS	Dimethyl-thiazole.
$C_5H_8ON_2$	Butyric acid cyanoamide.
$C_5H_8O_2S$	Tetrahydro- α -thiophenecarboxylic acid.
$C_5H_8O_2S_2$	Ethyltrithio-carbonglycollic acid.
$C_5H_8O_2S_2$	Ethyl- $\alpha\Delta$ -dithio-carbonglycollic acid.
	" $-\beta\Delta$ - " " "
$C_5H_8O_4N_2$	Succinuric acid.
$C_5H_8O_4S$	β -Thiocarbonglycollic acid mono ethyl ester.
	Thioglycolhydracrylic acid.
	α -Thiolactylglycollic acid.
$C_5H_8O_4S_2$	Methylenedi-thioglycollic acid.
$C_5H_8O_6S$	α -Sulphonepropionicacetic acid.
	β - " "
$C_5H_9O_2N$	<i>iso</i> -Nitrosomethylpropyl ketone.
	Pyrrolidine- α -carboxylic acid.
$C_5H_9O_2Cl$	δ -Chlorovaleric acid.
$C_5H_9O_2Br$	δ -Bromovaleric acid.
$C_5H_9O_2I$	δ -Iodovaleric acid.
$C_5H_9O_2N$	α -Oximino-valeric acid.
	γ - " " "
$C_5H_9O_4N$	d-Aminoglutaric acid.
	<i>inact.</i> -Aminoglutaric acid.
	α -Nitropropionic acid ethyl ester.
$C_5H_{10}OS_2$	Xanthic acid ethyl ester.
$C_5H_{10}O_2N_2$	Methylethyl glyoxime.
$C_5H_{10}O_2N_2$	Alanyl-aminoacetic acid.
$C_5H_{11}ON$	Valeric acid amide.
	<i>iso</i> -Valeric acid amide.
$C_5H_{11}O_2N$	α -Aminopropionic acid ethyl ester.
	Nitrous acid amyl ester.
	Trimethyl-aminoacetic acid.
$C_5H_{11}O_2N$	Nitric acid amyl ester.
$C_5H_{12}ON_2$	Diethyl-urea.
	Tetramethyl-urea.
$C_5H_{12}O_2S$	Dimethyl- α -propionyl thetine.
	" $-\beta$ - " "
$C_5H_{12}O_4S$	<i>iso</i> -Amylisethionic acid.
$C_5H_{13}ON$	Vinyltrimethyl ammonium hydroxide.
$C_5H_{13}NCl_2$	Trimethyl- β -chloroethyl ammonium chloride.
$C_5H_{13}ON$	Trimethyl-ethyl ammonium hydroxide.

5 IV.

$C_5H_2ON_6Fe$	Hydronitroprussic acid.
$C_5H_5O_2NS$	4-Methylthiazolé-5-carboxylic acid.
$C_5H_5O_2N_2Cl$	Methyl-chloro-uracil.
$C_5H_5O_2N_2Br$	Methyl-bromo-uracil.
$C_5H_5ON_2S$	Methyl-thio-uracil.
$C_5H_5O_6N_2S$	Thiosuccinuric acid.
$C_5H_{12}NClBr$	Trimethyl-2-bromoethyl ammonium chloride.

6 I.

C_6H_6	Benzene.
C_6H_{14}	Hexane.
C_6Cl_6	Hexachloro-benzene.

6 II.

$C_6H_2O_6$	Rhodizonic acid.
$C_6H_4O_2$	p-Benzoquinone.
$C_6H_4O_4$	Comanic acid.
$C_6H_4O_5$	Comenic acid.
$C_6H_4Br_2$	Dibromo-benzene.
C_6H_5Cl	Chlorobenzene.
C_6H_5Br	Bromobenzene.
C_6H_5I	Iodobenzene.
C_6H_5O	Phenol.
$C_6H_5O_2$	Hydroquinone.
	Pyrocatechol.
	Resorcinol.
$C_6H_5O_3$	Dimethyl-maleic acid anhydride.
	Hydroxy-hydroquinone.
	Phloroglucinol.
	Pyrogallol.
$C_6H_5O_4$	<i>sym.</i> -Methyltrimethenyl-dicarboxylic acid.
$C_6H_5O_5$	Aconitic acid.
	<i>pseudo</i> -Aconitic acid.
	Trimethylene-tricarboxylic acid.
C_6H_7N	Aniline.
	α -Picoline.
	β - " "
	γ - " "
$C_6H_5O_3$	Dihydro-resorcinol.
	Sorbic acid.
$C_6H_5O_3$	Adipic acid anhydride.

$C_4H_8O_3$	Hydroxymethylene-acetylacetone. Pentinic acid.
$C_6H_8O_4$	Allylmalonic acid. $\Delta\alpha\beta$ -Dihydro-muconic acid. $\Delta\beta\gamma$ - " " " Dimethyl-maleic acid. Ethylfumaric acid. Ethylmaleic acid. Fumaric acid mono ethyl ester. Maleic acid mono ethyl ester. α -Methyleneglutaric acid. <i>cis</i> - β -Methylglutaconic acid. <i>trans</i> - β - " " Methylitaconic acid. Tetramethylene-1,1-dicarboxylic acid. <i>cis</i> -Tetramethylene-1,2-dicarboxylic acid. <i>trans</i> - " -1,2- " "
$C_6H_8O_5$	Propenyltricarboxylic acid.
$C_6H_8O_7$	Tricarballic acid. Citric acid.
$C_6H_8N_2$	d-Saccharo-lactonic acid. o-Phenylene diamine. m- " " p- " "
$C_6H_{10}O_3$	Phenylhydrazine. $\alpha\beta$ -Hexenoic acid. $\beta\gamma$ - " " $\gamma\delta$ - " " $\delta\epsilon$ - " " α -Methyl- $\alpha\beta$ -pentenoic acid. α - " - $\beta\gamma$ - " " α - " - $\gamma\delta$ - " " β - " - $\alpha\beta$ - " " β - " - $\beta\gamma$ - " " Pentamethylene-carboxylic acid. Trimethyl-acrylic acid.
$C_6H_{10}O_3$	Acetoacetic acid ethyl ester. β -Aceto- <i>iso</i> -butyric acid. γ -Acetobutyric acid.
$C_6H_{10}O_4$	Adipic acid. <i>sym.</i> -p-Dimethyl-succinic acid. <i>sym.</i> - <i>anti</i> -Dimethyl-succinic acid. <i>asym.</i> -Dimethyl-succinic acid. Ethylsuccinic acid.

$C_6H_{10}O_4$	Methylethylmalonic acid. α -Methylglutaric acid. β - " " Oxalic acid diethyl ester. Propylmalonic acid. <i>iso</i> -Propylmalonic acid. Pyrotartaric acid mono methyl ester. Succinic acid mono ethyl ester. <i>iso</i> -Succinic acid mono ethyl ester.
$C_6H_{10}O_5$	l-Malic acid dimethyl ester. Saccharin. <i>iso</i> -Saccharin.
$(C_6H_{10}O_5)_x$	Glycogen. Starch.
$C_6H_{10}O_8$	Mucic acid. d-Saccharic acid.
$C_6H_{11}N$	Capronitrile.
$C_6H_{11}N_3$	Diethyl-triazole.
$C_6H_{12}O_2$	Acetic acid <i>iso</i> -butyl ester. <i>iso</i> -Butylacetic acid. Butyric acid ethyl ester. <i>iso</i> -Butyric acid ethyl ester. Caproic acid. <i>iso</i> -Caproic acid. Diacetone alcohol. Diethyl-acetic acid. Dimethyl-ethylacetic acid. Formic acid amyl ester. Propionic acid propyl ester. Valeric acid methyl ester.
$C_6H_{12}O_3$	α -Hydroxy- $\alpha\beta\beta$ -trimethyl-propionic acid. β - " - $\alpha\beta\beta$ - " " " Paraldehyde; see under Acetaldehyde. Trimethyl-ethylene lactic acid.
$C_6H_{12}O_6$	Fructose. Galactose. Glucose. Saccharinic acid.
$C_6H_{12}O_7$	Glyconic acid.
$C_6H_{12}N_4$	2,5-Diethyl-1-amino-1,3,4-triazole.
$C_6H_{14}O_2$	Pinacone.
$C_6H_{14}O_6$	Dulcitol. d-Mannitol.
$C_6H_{15}N$	Dipropyl-amine.

C_3H_7N	Di- <i>iso</i> -propyl amine.
	Triethyl-amine.
C_3H_7P	Triethyl phosphine.
$C_6O_2Cl_4$	Chloroanil.

6 III.

$C_6H_2O_4Cl_2$	Chloroanilic acid.
$C_6H_2O_4Br_2$	Bromoanilic acid.
$C_6H_2O_5Cl_4$	Tetrachloro-diketo-pentamethylene-hydroxy-carboxylic acid.
$C_6H_2O_6N_4$	Dinitro-oxybenzo furazane.
	1,2-Dinitroso-3,5-dinitro-benzene.
$C_6H_2O_5N_2$	Nitroanilic acid.
$C_6H_3OCl_3$	2,4,6-Trichloro-phenol.
$C_6H_3O_5Cl_3$	Trichloro-diketo-pentamethylene-hydroxy-carboxylic acid.
	Trichloro-tetraketo-hexamethylene-hydrate.
$C_6H_3O_6N_3$	1,3,5-Trinitro-benzene.
$C_6H_3O_7N_3$	2,4,6-Trinitro-phenol.
$C_6H_3O_6N_3$	2,4,6-Trinitro-resorcinol.
$C_6H_2O_{12}Cr$	Chromioxalic acid.
$C_6H_2O_{12}Fe$	Ferrioxalic acid.
$C_6H_2N_6Cr$	Chromicyanic acid.
$C_6H_2N_6Co$	Cobalticyanic acid.
$C_6H_2N_6Ir$	Iridium cyanic acid.
$C_6H_2N_6Fe$	Ferricyanic acid.
$C_6H_2N_6Mn$	Manganese cyanic acid.
$C_6H_4ON_2$	Phenylene furazane.
$C_6H_4OCl_2$	2,4-Dichloro-phenol.
$C_6H_4O_2S$	α -Thienylglyoxylic acid.
$C_6H_4O_4N_2$	o-Dinitro-benzene.
	m- " "
	p- " "
$C_6H_4O_6N_2$	2,3-Dinitro-phenol.
	2,4- " "
	2,5- " "
	2,6- " "
	3,4- " "
	3,5- " "
$C_6H_4O_6N_2$	2,6-Dinitro-hydroquinone.
$C_6H_4O_6N_4$	2,4,6-Trinitro-aniline.
$C_6H_4N_6Fe$	Ferrocyanic acid.
C_6H_5OCl	o-Chlorophenol.

C_6H_5OCl	p-Chlorophenol.
C_6H_5OI	Iodosobenzene.
$C_6H_5O_2N$	Nitrobenzene.
	p-Nitrosophenol.
	Pyridine-2-carboxylic acid.
	“ -3- “ “
	“ -4- “ “
$C_6H_5O_2I$	Iodoxybenzene.
$C_6H_5O_2N$	Comanamic acid.
	α -Hydroxy-nicotinic acid.
	o-Nitrophenol.
	m- “
	p- “
	2-(α)-Pyrrolyglyoxylic acid.
$C_6H_5O_2N_2$	p-Nitrobenzene diazonium hydroxide.
	iso-p- “ “ “
	p-Nitrophenyl-nitrosoamine.
$C_6H_5O_4N$	Comenamic acid.
	2-Nitroresorcinol.
	4- “
$C_6H_5O_4N_2$	2,4-Dinitro-aniline.
$C_6H_5O_4Cl_3$	Trichloro-R-pentenedihydroxy-carboxylic acid.
$C_6H_5O_5N_2$	2-Amino-4,6-dinitro-phenol.
$C_6H_5ON_2$	Benzene diazonium hydroxide.
$C_6H_5ON_4$	6-Methyl-2,3-triazo-4-hydroxy-7,0''-pyridazine.
$C_6H_5O_6N_2$	o-Benzoquinone dioxime.
	p- “ “
	o-Diazo phenol.
	p- “ “
	o-Nitroaniline.
	m- “
	p- “
	Phenylnitroamine.
	Phenylnitrosohydroxylamine.
$C_6H_6O_2N_4$	7-Methyl xanthine.
	Succinic acid di-cyanodiamide.
$C_6H_6O_3S$	Benzene sulphinic acid.
$C_6H_5O_3N_2$	2-Amino-4-nitrophenol.
$C_6H_6O_3S$	Benzene sulphonic acid.
$C_6H_5O_4N_2$	Dimethyl-alloxan.
$C_6H_6O_4S$	o-Phenol sulphonic acid.
	m- “ “ “
	p- “ “ “
$C_6H_6O_7S_2$	Phenol-2,4-disulphonic acid.

C_6H_5NCl	o-Chloroaniline. m- " " " " " "
C_6H_5NBr	m-Bromoaniline. p- " " " " " "
C_6H_7ON	o-Aminophenol. m- " " " " " "
$C_6H_7O_2B$	Phenylboric acid.
$C_6H_7O_2N$	Cyanoacetoacetic acid methyl ester.
$C_6H_7O_2N_2$	Dimethyl-violuric acid.
$C_6H_7O_2N_3$	Dimethyl-nitrobarbituric acid.
$C_6H_8ON_4$	3-Methyl-2-oxy-1,6-dihydro-purine.
$C_6H_8O_2N_2$	α -Dimethyl-uracil. β - " " " " " "
$C_6H_8O_2N_3$	Cyanonitrosoacetic acid propyl ester. 5,5-Dimethyl-barbituric acid. 5-Ethylbarbituric acid.
C_6H_8NCl	Methylpyridinium chloride.
C_6H_8NI	Methylpyridinium iodide.
C_6H_8ON	Methylpyridinium hydroxide.
$C_6H_8O_2N_2$	Histidine.
$C_6H_8O_2N$	<i>iso</i> -Nitrosoacetoacetic acid ethyl ester.
$C_6H_8O_4N_2$	γ - <i>iso</i> -Nitroso- β -nitrosoamino-crotonic acid ethyl ester.
$C_6H_9O_4Br$	α -Ethylbromosuccinic acid. β - " " " " " "
$C_6H_9O_5N$	α -Oximino-succinic acid mono ethyl ester. β - " " " " " " " "
$C_6H_9O_6N$	Triglycolamic acid.
$C_6H_{10}ON_2$	<i>iso</i> -Valeric acid cyanoamide.
$C_6H_{10}O_4S$	α -Thiodilactylic acid. (α -modification). α - " " " (β - " "). β - " " " " " "
	Thio- α -lactylhydracrylic acid.
$C_6H_{10}O_4S_2$	α -Dithio-dilactylic acid. β - " " " " " "
$C_6H_{10}O_4S_3$	α -Trithio-dilactylic acid.
$C_6H_{10}O_4Se$	Selenium dilactylic acid.
$C_6H_{10}O_6N_2$	$\beta\beta$ -Dinitro-caproic acid.
$C_6H_{10}O_6S$	α -Sulphonedipropionic acid. β - " " " " " "
$C_6H_{11}O_2Br$	α -Bromobutyric acid ethyl ester.
$C_6H_{11}O_4N$	Ethylaminosuccinic acid.

$C_6H_{11}O_4N$	Nitrocaproic acid.
$C_6H_{11}O_4N_2$	Methyl-dihydroxy-triazole carboxylic acid ethyl ester.
$C_6H_{11}O_7P$	Phosphoric acid mono mannide ester.
$C_6H_{11}NS$	Thiocyanic acid amyl ester.
$C_6H_{11}NF_4$	Tetrafluoro-triethyl amine.
$C_6H_{12}O_4N_4$	γ -iso-Nitroso- β -nitrosoamino-crotonic acid ethyl ester ammonium salt.
$C_6H_{12}O_5Hg_3$	Trimercury-diacetone hydroxide.
$C_6H_{12}ON$	Caproic acid amide.
$C_6H_{12}O_2N$	Aminocaproic acid.
	Diethylamino-acetic acid.
$C_6H_{14}O_2N_2$	Lysine.
$C_6H_{14}O_2N_4$	Arginine.
$C_6H_{14}O_2S$	Diethyl thetine.
	Dimethyl thetine ethyl ester.
$C_6H_{14}O_2Se$	Diethyl selenium thetine.
$C_6H_{14}NCl$	Trimethyl-allyl ammonium chloride.
$C_6H_{15}O_3B$	Boric acid triethyl ester.
$C_6H_{15}ClTe$	Triethyl tellurium chloride.
$C_6H_{15}ISn$	Tin triethyl iodide.
$C_6H_{15}SP$	Triethyl phosphine sulphide.
$C_6H_{16}OS$	Triethyl sulphonium hydroxide.
$C_6H_{16}OSn$	Tin triethyl hydroxide.
$C_6H_{16}NCl$	Trimethyl propyl ammonium chloride.
$C_6H_{17}ON$	Dimethyl diethyl ammonium hydroxide.
	Trimethyl propyl ammonium hydroxide.
$C_6O_{12}CrNa_2$	Sodium chromi-oxalate.
$C_6O_{12}FeK_2$	Potassium ferri-oxalate.
$C_6N_6CrK_3$	Potassium chromicyanide.
$C_6N_6CoK_3$	Potassium cobalticyanide.
$C_6N_6IrK_3$	Potassium iridium cyanide.
$C_6N_6FeK_3$	Potassium ferricyanide.
$C_6N_6MnK_3$	Potassium manganese cyanide.

6 IV.

$C_6HO_5N_2Br_3$	3,5-Dinitro-2,4,6-tribromo-phenol.
$C_6H_5O_3Cl_3Br$	Hexahydroxy-trichloro-bromotriketo-hexamethylene.
$C_6H_2N_6S_6Pt$	Platini thiocyanic acid.
$C_6H_5ON_2Cl_3$	2,4,6-Trichloro-benzene diazonium hydroxide.
$C_6H_5ON_2Br_3$	2,4,6-Tribromo-benzene diazonium hydroxide.
$C_6H_5O_2NCl_2$	4-Nitro-2,6-dichloro-phenol.

$C_6H_3O_4N_2Br$	1,3-Dinitro-4-bromobenzene.
$C_6H_3N_6S_6Cr$	Chromithiocyanic acid.
C_6H_4ONCl	p-Benzoquinone chloroimide.
$C_6H_4ON_2Br_2$	2,4-Dibromo-benzene diazonium hydroxide.
$C_6H_4O_2NCl$	m-Nitrochlorobenzene.
	p- " "
$C_6H_4O_2NCl$	4-Nitro-2-chlorophenol.
$C_6H_4O_2N_2S$	Diazo benzene p-sulphonic acid.
$C_6H_4O_2N_2S$	2,6-Dinitro-phenol-4-sulphonic acid.
$C_6H_5ON_2Br$	p-Bromobenzene diazonium hydroxide.
$C_6H_5O_2NS$	Thienyl- <i>syn</i> -ketoxime-carboxylic acid.
$C_6H_5O_4NS$	2-Methylthiazole-4,5-dicarboxylic acid.
$C_6H_5O_2NS$	m-Nitrobenzene sulphonic acid.
$C_6H_5O_2NS$	o-Nitrophenol-4-sulphonic acid.
C_6H_5ONCl	2-Amino-4-chlorophenol.
$C_6H_5O_4N_2S$	Benzene sulphonic acid nitreamide.
	o-Nitrobenzene sulphonic acid amide.
	m- " " " "
	p- " " " "
$C_6H_5O_2N_2S$	3-Nitroaniline-6-sulphonic acid.
$C_6H_7O_2NS$	Benzene sulphonic acid amide.
	2,4-Dimethyl-thiazole-5-carboxylic acid.
$C_6H_7O_2NS$	o-Aniline sulphonic acid.
	m- " " "
	p- " " "
$C_6H_7O_4NS$	2-Aminophenol-4-sulphonic acid.
	4- " -2- " "
$C_6H_7O_6NS_2$	Aniline-2,4-disulphonic acid.
$C_6H_8O_3N_2S$	o-Phenylene diamine 3-sulphonic acid.
$C_6H_8O_4N_2S$	2,6-Diamino-phenol-4-sulphonic acid.
$C_6H_{12}O_2BrS$	Dimethyl thetine ethyl ester bromide.
$C_6H_{12}O_2BrSe$	Diethyl selenium thetine bromide.
$C_6N_6S_6K_2Pt$	Potassium platini thiocyanate.
$C_6N_6S_6CrK_3$	Potassium chromithiocyanate.

6 V.

$C_6H_4O_2NBr_2S$	2,4,6-Tribromo-benzene sulphonic acid amide.
$C_6H_4O_2NBr_2S$	4,5,6-Tribromo-aniline-2-sulphonic acid.
2,4,6-	" " -3- " "
2,5,6-	" " -3- " "
$C_6H_5O_2NCl_2S$	Dichloro-aniline-3-sulphonic acid.
$C_6H_5O_2NBr_2S$	4,5-Dibromo-aniline-2-sulphonic acid.
4,6-	" " -2- " "

$C_6H_3O_6NBr_2S$	4,6-Dibromo-aniline-3-sulphonic acid.
	2,6- " " -4- " "
$C_6H_5O_2NBrS$	2-Bromoaniline-5-sulphonic acid.
	4- " -2- " "
	4- " -3- " "
$C_6H_5O_4NClS$	4-Amino-2-chlorophenol sulphonic acid.

7 I.

C_7H_8	Toluene.
C_7H_{16}	Heptane.

7 II.

$C_7H_4O_6$	Chelidonic acid.
$C_7H_4O_7$	Meconic acid.
C_7H_5N	Benzonitrile.
$C_7H_5N_3$	Diazo benzene cyanide.
C_7H_6O	Benzaldehyde.
$C_7H_6O_2$	Benzoic acid.
	o-Hydroxy-benzaldehyde.
	m- " "
	p- " "
$C_7H_6O_3$	2,4-Dihydroxy-benzaldehyde.
	2,5- " "
	3,4- " "
	Furfuracrylic acid.
	allo-Furfuracrylic acid.
	o-Hydroxy-benzoic acid.
	m- " " "
	p- " " "
$C_7H_6O_4$	2,3-Dihydroxy-benzoic acid.
	2,4- " " "
	2,5- " " "
	2,6- " " "
	3,4- " " "
	3,5- " " "
	Hydroxy-hydroquinone aldehyde.
	Phloroglucinol aldehyde.
	Pyrogallol aldehyde.
$C_7H_6O_5$	Gallic acid.
	Phloroglucinol carboxylic acid.
	Pyrogallol carboxylic acid.
$C_7H_4O_3$	Propargylenetetra-carboxylic acid.
$C_7H_5Cl_2$	Benzylidene chloride.

C_7H_7Cl	Benzyl chloride. p-Chlorotoluene.
C_7H_7Br	Benzyl bromide.
C_7H_8O	Anisole. Benzyl alcohol. o-Cresol. m- " p- "
$C_7H_8O_2$	2,6-Dimethyl-pyrone. Guaiacol. Orcinol.
$C_7H_8O_3$	2,4-Dimethyl-furfurane-3-carboxylic acid. Methylethylmaleic anhydride.
$C_7H_8O_4$	Piperylenedicarboxylic acid.
$C_7H_8O_5$	$\beta\gamma$ -Dicarboxylic- γ -valerolactone.
C_7H_9N	Benzyl amine. Dimethyl-pyridine. 2,6-Dimethyl-pyridine. Ethylpyridine. Methylaniline. o-Toluidine. m- " p- "
$C_7H_{10}O_2$	m-Methyldihydro-resorcinol. Δ^1 -Tetrahydro-benzoic acid. Δ^2 - " " "
$C_7H_{10}O_3$	Hexinic acid. Pimelic acid anhydride.
$C_7H_{10}O_4$	Allylsuccinic acid. 1,2-Dimethyl-cyclopropane-1,2-dicarboxylic acid aa'-Dimethyl-glutaconic acid. α -Ethylideneglutaric acid. Ethylitaconic acid. Hydroxy-methylene-acetoacetic acid ethyl ester. Hydroxy-pimelic acid anhydride. Methylene-dimethyl-succinic acid. Methylethylmaleic acid. cis-Pentamethylene-1,2-dicarboxylic acid. trans- " -1,2- " " cis- " -1,3- " " trans- " -1,3- " " Propenylsuccinic acid. Propylfumaric acid. Teraconic acid.

$C_7H_{10}O_4$	Terebic acid.
$C_7H_{10}O_5$	Acetylmalonic acid dimethyl ester.
	Dimethyl-dihydroxy-glutaric lactone.
	Hydrochelidonic acid.
	Shikimic acid.
$C_7H_{10}O_6$	Butenyltricarboxylic acid.
	<i>iso</i> - " " "
	β -Dimethyl-ethenyl-tricarboxylic acid.
	<i>fum.</i> - α -Methyltricarballic acid.
	<i>mal.</i> - α - " " "
	Tricarballic acid α -mono methyl ester.
	" " β - " " "
$C_7H_{10}N_2$	2,4-Toluylene diamine.
	2,5- " "
	3,4- " "
$C_7H_{12}O_2$	α -Ethyl- $\alpha\beta$ -pentenoic acid.
	α - " - $\beta\gamma$ - " "
	$\alpha\beta$ -Heptenoic acid.
	Hexahydro-benzoic acid.
	1-Methylpentamethylene-2-carboxylic acid.
$C_7H_{12}O_3$	α -Dimethyl-laevulinic acid.
	α -Ethyl- β -acetylpropionic acid.
	Methylacetoacetic acid ethyl ester.
	β -Methyl- γ -acetylbutyric acid.
$C_7H_{12}O_4$	Butylmalonic acid.
	<i>iso</i> -Butylmalonic acid.
	Diethyl-malonic acid.
	<i>mal.</i> - <i>sym.</i> -Dimethyl-glutaric acid.
	<i>fum.</i> - <i>sym.</i> - " " "
	$\beta\beta$ -Dimethyl-glutaric acid.
	Dimethyl-malonic acid mono ethyl ester.
	<i>sym.</i> - <i>anti</i> -Dimethyl-succinic acid mono methyl ester.
	<i>sym.</i> - <i>p</i> -Dimethyl-succinic acid mono methyl ester.
	<i>asym.</i> -Dimethyl-succinic acid α -mono methyl ester.
	<i>asym.</i> - " " " β - " " "
	α -Ethylglutaric acid.
	Ethylmalonic acid mono ethyl ester.
	Malonic acid diethyl ester.
	α -Methyladipic acid.
	<i>fum.</i> - <i>sym.</i> -Methylethylsuccinic acid.
	<i>mal.</i> - <i>sym.</i> - " "
	<i>norm.</i> -Pimelic acid.
	<i>iso</i> - " "

$C_7H_{12}O_4$	γ -Pimelic acid. Propylsuccinic acid. <i>iso</i> -Propylsuccinic acid. Trimethyl-succinic acid.
$C_7H_{12}O_5$	<i>aa'</i> -Dimethyl- β -hydroxy-glutaric acid. Hydroshikimic acid. Hydroxy-trimethyl-succinic acid.
$C_7H_{12}O_6$	Dimethyl-dihydroxy-glutaric acid. Quinic acid. <i>inact.</i> -Quinic acid.
$C_7H_{12}O_7$	Dihydroxy-hydroshikimic acid.
$C_7H_{14}O$	Heptyl aldehyde.
$C_7H_{14}O_2$	Acetic acid amyl ester. Butyric acid propyl ester. Heptoic acid. Valeric acid ethyl ester.
$C_7H_{14}O_3$	β -Diethyl-ethylenelactic acid. Dimethyl-ethyl ethylenelactic acid. Tetramethyl-ethylenelactic acid.
$C_7H_{16}O$	Heptyl alcohol.
$C_7H_{16}O_6$	Ortho-formic acid triethyl ester.

7 III.

$C_7H_4O_2Br_3$	2,4,6-Tribromo-benzoic acid.
$C_7H_5O_2N_3$	Trinitro-benzoic acid.
$C_7H_5N_3Br_2$	2,4-Dibromo-benzene diazonium <i>syn</i> -cyanide.
$C_7H_4O_2Cl_2$	2-Hydroxy-3,5-dichloro-benzoic acid. 3- " -2,6- " " "
$C_7H_4O_2Br_2$	4-Hydroxy-3,5-dibromo-benzoic acid.
$C_7H_4O_4Cl_2$	3,4-Dihydroxy-2,5-dichloro-benzoic acid. 3,4- " -5,6- " " "
$C_7H_4O_5Br_2$	Dibromo-gallic acid.
$C_7H_4O_5N_2$	2,3-Dinitro-benzoic acid. 2,4- " " " 2,5- " " " 2,6- " " " 3,4- " " " 3,5- " " "
$C_7H_4N_3Cl$	p-Chlorobenzene diazonium <i>syn</i> -cyanide.
$C_7H_4N_3Br$	p-Bromobenzene diazonium <i>syn</i> -cyanide.
C_7H_5ON	p-Cyano phenol.
C_7H_5OCl	Benzoyl chloride.
$C_7H_5O_2Cl$	o-Chlorobenzoic acid.

$C_7H_5O_2Cl$	m-Chlorobenzoic acid.
	p- " "
$C_7H_5O_2Br$	o-Bromobenzoic acid.
	m- " "
	p- " "
$C_7H_5O_2I$	o-Iodobenzoic acid.
	m- " "
	p- " "
$C_7H_5O_2F$	m-Fluorobenzoic acid.
$C_7H_5O_2N$	m-Nitrobenzaldehyde.
	p- " "
$C_7H_5O_2Cl$	2-Hydroxy-5-chlorobenzoic acid.
	3- " -2- " "
	3- " -6- " "
	4- " -3- " "
$C_7H_5O_2I$	o-Iodosobenzoic acid.
$C_7H_5O_4N$	o-Nitrobenzoic acid.
	m- " "
	p- " "
	Pyridine-2,3-dicarboxylic acid.
	" -2,4- " "
	" -2,5- " "
	" -3,4- " "
	" -3,5- " "
$C_7H_5O_2N$	Ammonchelidonic acid.
	α -Hydroxy-iso-cinchomeric acid.
	3-Nitro-2-hydroxy-benzoic acid.
	5- " -2- " " "
$C_7H_5O_6Br$	Bromogallic acid.
$C_7H_5O_6N_3$	Trinitro-toluene.
C_7H_5NS	Phenyl thiocarbimide.
$C_7H_5O_2N_2$	m-Nitrobenzoic acid amide.
	p- " " "
$C_7H_5O_4N_2$	3-Amino-5-nitrobenzoic acid.
	2,4-Dinitro-toluene.
	m-Nitrophenyl-nitromethane.
	Phenyldinitro-methane.
$C_7H_5O_6N_2$	3-Amino-5-nitro-2-hydroxy-benzoic acid.
$C_7H_5O_6S$	m-Sulphobenzoic acid.
$C_7H_5O_6S$	5-Sulphosalicylic acid.
C_7H_7ON	Benzoic acid amide.
	Formanilide.
$C_7H_7O_2N$	o-Aminobenzoic acid.
	m- " "

$C_7H_7O_3N$	p-Aminobenzoic acid. Benzhydroxamic acid. o-Hydroxy-benzoic acid amide. 6-Nitroso-m-cresol. o-Nitrotoluene. m- " p- " Phenylnitromethane. iso-Phenylnitromethane.
$C_7H_7O_3N_2$	α -Nitroformaldehyde phenylhydrazone. β - " "
$C_7H_7O_4N$	p-Amino-2-hydroxy-benzoic acid. 2-Methylpyrrylketone-5-carboxylic acid. 1-Methylpyrrylglyoxylic acid. p-Nitroanisole. 4-Nitrosoorcinol. Salicylhydroxamic acid.
C_7H_7NS	Thiobenzoic acid amide. Thioformanilide.
$C_7H_9ON_2$	p-Nitroso-methylaniline.
$C_7H_9O_2N_2$	p-Anisole diazonium hydroxide. 3,5-Diamino-benzoic acid. β -Nitroso-benzylhydroxylamine. 3-Nitro-4-toluidine.
$C_7H_9O_2N_4$	1,3-Dimethyl-2,6-dioxy-purine. 1,7- " -2,6- " " 3,7- " -2,6- " "
$C_7H_9O_3S$	o-Toluene sulphinic acid. p- " " "
$C_7H_9O_3S$	o-Anisole sulphinic acid. Benzyl sulphonic acid. p-Toluene sulphonic acid.
C_7H_9ON	o-Anisidine. p- "
$C_7H_9O_3N$	2,4-Dimethyl-pyrrole-3-carboxylic acid. 2,4- " " -5- " " 2,5- " " -3- " "
$C_7H_9O_3N$	Cyanoacetoacetic acid ethyl ester. Cyanopropionylacetic acid methyl ester.
$C_7H_9O_3P$	Hydroxybenzyl hypophosphoric acid.
$C_7H_{10}ON_4$	1,3-Dimethyl-2-oxy-1,6-dihydro-purine.
$C_7H_{10}O_4Br_2$	Dibromo-hydroshikimic acid.
$C_7H_{10}O_6S_3$	Methinetritio-glycollic acid.
$C_7H_{10}NCl$	Ethylpyridinium chloride.

$C_7H_{10}NCl$	Methylpicolinium chloride.
$C_7H_{11}O_2N$	<i>rac.</i> -Ecgoninic acid.
$C_7H_{11}O_4N$	N-Methyl-pyrrolidine- $\alpha\alpha'$ -dicarboxylic acid.
$C_7H_{11}O_6N$	Nitromalonic acid diethyl ester.
$C_7H_{12}O_4N$	d-Aminoglutaric acid ethyl ester.
$C_7H_{15}O_2N$	Trimethyl-aminoacetic acid ethyl ester.
$C_7H_{15}O_2N$	Piperidinoacetic acid.
$C_7H_{18}NCl$	Methyltriethyl ammonium chloride.
	Trimethyl- <i>iso</i> -butyl ammonium chloride.

7 IV.

$C_7H_4O_4ClBr$	3-Hydroxy-2-chloro-6-bromobenzoic acid. 3- " -6- " -2- " "
$C_7H_4O_4NCl$	3-Nitro-2-chlorobenzoic acid. 4- " -2- " " 5- " -2- " " 2- " -3- " " 6- " -3- " " 2- " -4- " " 3- " -4- " "
$C_7H_4O_4NBr$	3-Nitro-2-bromobenzoic acid. 5- " -2- " " 2- " -3- " " 6- " -3- " "
$C_7H_5O_2NBBr_2$	3,4-Dibromo-1-methylpyrrylglyoxylic acid.
$C_7H_5O_2NS$	<i>o</i> -Benzoic sulphinide.
$C_7H_5O_2NCl$	3-Amino-2-chlorobenzoic acid. 3- " -6- " " <i>norm.</i> - <i>p</i> -Chlorophenyl-nitromethane. <i>iso-p</i> - " "
	3-Nitro-4-chlorotoluene.
$C_7H_5O_2NBr$	<i>norm.</i> - <i>p</i> -Bromophenyl-nitromethane. <i>iso-p</i> - " "
$C_7H_5O_2N_2S$	Benzene sulphonic acid cyanoamide.
$C_7H_7O_4NS$	<i>o</i> -Sulphaminebenzoic acid. <i>p</i> - " "
	<i>o</i> -Sulphobenzoic acid amide.
$C_7H_7O_6NS$	2-Amino-4-sulphobenzoic acid. 4- " -2- " " 4- " -3- " " 5- " -2- " " 5- " -3- " " <i>m</i> -Nitrotoluene sulphonic acid.

$C_7H_7O_6NS$	3-Amino-2-hydroxy-5-sulphobenzoic acid.
$C_7H_5O_6N_2S$	2-Nitro-4-toluidine-5-sulphonic acid.
$C_7H_9O_3NS$	p-Aminobenzyl sulphonic acid.
	o-Methoxy-benzene sulphonic acid amide.
m-	" " " " "
p-	" " " " "
	1-Methylaniline-4-sulphonic acid.
	2-Toluidine-4-sulphonic acid.
2-	" -5- " "
3-	" -2- " "
4-	" -2- " "
4-	" -3- " "
4-	" -?- " "
$C_7H_9O_6N_2S$	2-Nitro-4-tolylhydrazine-5-sulphonic acid.
$C_7H_9O_6NS_2$	2-Toluidine-3,5-disulphonic acid.
3-	" -2,4- " "
$C_7H_{10}O_6N_2S$	2,4-Tolylene-diamine-5-sulphonic acid.
2,6-	" " -4- " "
$C_7H_{17}NCII$	Iodomethyl-triethyl ammonium chloride.

7 V.

$C_7H_7O_3NB r_2S$	3,5-Dibromo-2-toluidine-4-sulphonic acid.
$C_7H_5O_3NB rS$	3-Bromo-2-toluidine-5-sulphonic acid.
?-	" -2- " -?- " "
?-	" -4- " -2- " "
$C_7H_5O_3NIS$	4-Iodo-2-toluidine-5-sulphonic acid.
$C_7H_5O_3N_2BrS$	Bromo-2,6-toluylenediamine-4-sulphonic acid.

8 I.

C_8H_{10}	Ethyl benzene.
	o-Xylene.
m-	"
p-	"

8 II.

$C_8H_4O_2$	o-Phthalic acid anhydride.
$C_8H_6O_3$	Phenylglyoxylic acid.
	o-Phthalaldehydic acid.
	Piperonal.
$C_8H_6O_4$	o-Phthalic acid.
m-	" "
p-	" "
$C_8H_6O_5$	4-Hydroxy-o-phthalic acid.

$C_8H_6O_6$	2-Hydroxy-p-phthalic acid.
C_8H_7N	Benzyl cyanide.
	p-Tolunitrile.
C_8H_7Br	(ω)-1 ² -Bromostyrolene.
C_8H_8O	Acetophenone.
$C_8H_8O_2$	Acetic acid phenyl ester.
	Anisic aldehyde.
	Benzoic acid methyl ester.
	5-Hydroxy-o-toluic aldehyde.
	2- " -m- " "
	4- " -m- " "
	6- " -m- " "
	3- " -p- " "
	Phenylacetic acid.
	α -iso-Phenylacetic acid.
	β -iso- " "
	δ -iso- " "
	o-Toluic acid.
	m- " "
	p- " "
	<i>pseudo</i> -m-Toluic acid.
$C_8H_8O_3$	o-Hydroxy-benzoic acid methyl ester.
	o-Hydroxymethyl-benzoic acid.
	o-Hydroxyphenyl-acetic acid.
	p- " " "
	3-Hydroxy-o-toluic acid.
	6- " -o- " "
	2- " -m- " "
	4- " -m- " "
	3- " -p- " "
	o-Methoxy-benzoic acid.
	m- " " "
	p- " " "
	Orcyl aldehyde.
	Phenoxy-acetic acid.
	<i>inact.</i> -Phenylglycollic acid.
	l- " "
	Δ^2 -Tetrahydro-o-phthalic acid anhydride.
	Vanillin.
$C_8H_8O_4$	Dehydroacetic acid.
	<i>iso</i> -Dehydroacetic acid.
	$\Delta^{1,2}$ -Dihydro-o-phthalic acid.
	$\Delta^{2,4}$ - " -o- " "
	$\Delta^{2,5}$ - " -o- " "

$C_8H_8O_4$	$\Delta^{2,4}$ -Dihydro-o-phthalic acid. <i>trans</i> - $\Delta^{2,5}$ -Dihydro-o-phthalic acid. Dimethyl-pyrone carboxylic acid. Guaiacolcarboxylic acid. Orcinolcarboxylic acid. Orsellic acid. p-Orsellic acid. Pyronecarboxylic acid. Vanillic acid. <i>iso</i> -Vanillic acid.
$C_8H_8O_5$	Gallic acid methyl ester. Haematinic acid anhydride. Hydroxy-dehydroacetic acid.
$C_8H_8O_7$	Diacetyl-tartaric acid anhydride.
$C_8H_{10}O$	Phenetole. 1,3-Xylenol(4).
$C_8H_{10}O_3$	Methylpropylmaleic acid anhydride. Methyl- <i>iso</i> -propylmaleic acid anhydride.
$C_8H_{10}O_4$	<i>trans</i> - Δ^1 -Tetrahydro-o-phthalic acid. Δ^2 -Tetrahydro-o-phthalic acid. Δ^2 - " -o- " " <i>cis</i> - Δ^4 -Tetrahydro-o-phthalic acid. <i>trans</i> - Δ^4 -Tetrahydro-o-phthalic acid. Δ^1 -Tetrahydro-p-phthalic acid.
$C_8H_{10}O_5$	Diacetyl-succinic acid.
$C_8H_{10}O_8$	α -Butanetetracarboxylic acid. β - " " " Diacetyl-tartaric acid.
$C_8H_{11}N$	Dimethyl-aniline. Ethylaniline. 2,4,6-Trimethyl-pyridine. <i>asym.</i> -m-Xylidine. p-Xylidine.
$C_8H_{12}O_3$	1-Cycloheptene-1-carboxylic acid. 2- " -1- " " Cyclohexene-acetic acid. Liquid isomer. " " " Solid "
$C_8H_{12}O_4$	Dimethyl-dihydro-resorcinol. Heptinic acid. Suberic acid anhydride.
$C_8H_{12}O_4$	<i>iso</i> -Butylfumaric acid. Diaceto-acetic acid ethyl ester. Dicrotonic acid. <i>cis</i> -Hexahydro-o-phthalic acid.

$C_8H_{12}O_4$	<i>trans</i> -Hexahydro-o-phthalic acid.
	<i>cis</i> - " -p- " "
	<i>trans</i> - " -p- " "
	<i>p</i> -Methylallylsuccinic acid.
	<i>meso</i> -Methylallylsuccinic acid.
	Methylethyl-aticonic acid.
	Methylethyl-itaconic acid.
	Methylpropylmaleic acid.
	Methyl- <i>iso</i> -propylmaleic acid.
	Hydroxymethylene-malonic acid diethyl ester.
$C_8H_{12}O_5$	<i>aa</i> -Dimethyl-tricarballic acid.
$C_8H_{12}O_6$	<i>aa'</i> - " " " a) acid.
	<i>aa'</i> - " " " b) "
	<i>aa'</i> - " " " c) "
	Ethyltricarballic acid.
	Haemotricarboxylic acid. m. p. 140°-141°.
	" " m. p. 175°-176°.
	<i>mal</i> - <i>a</i> -Methyltricarballic acid mono methyl ester.
$C_8H_{12}N_2$	Dimethyl- <i>p</i> -phenylene diamine.
$C_8H_{14}O_2$	Cycloheptane-carboxylic acid.
	Cyclohexane-acetic acid.
	1-Ethylpentamethylene-2-carboxylic acid.
	1-Methylcyclohexane-1-carboxylic acid.
	<i>cis</i> -1-Methylcyclohexane-2-carboxylic acid.
	<i>trans</i> -1- " -2- " "
	1-Methylcyclohexane-3-carboxylic acid.
	1- " -4- " "
	<i>iso</i> -Butyric acid anhydride.
	Ethylacetoacetic acid ethyl ester.
$C_8H_{14}O_4$	Adipic acid mono ethyl ester.
	<i>iso</i> -Butyl-succinic acid.
	<i>fum</i> - <i>sym</i> -Diethyl-succinic acid.
	<i>mal</i> - <i>sym</i> - " " " "
	<i>a</i> - <i>sym</i> -Dimethyl-adipic acid.
	<i>β</i> - <i>sym</i> - " " " "
	Dimethyl-ethylsuccinic acid.
	<i>α</i> -Ethyladipic acid.
	Ethylpropylmalonic acid.
	<i>meso</i> - <i>a</i> -Methyl- <i>α'</i> -ethylglutaric acid.
	<i>β</i> -Methyl- <i>α</i> -ethylglutaric acid.
	<i>α</i> -Methylpimelic acid.
	<i>cis</i> - <i>aa</i> ₁ -Methylpropylsuccinic acid.
	<i>trans</i> - <i>aa</i> ₁ - " "
	<i>cis</i> - <i>sym</i> -Methyl- <i>iso</i> -propylsuccinic acid.

$C_8H_{14}O_4$	<i>trans-sym.</i> -Methyl- <i>iso</i> -propylsuccinic acid. <i>α</i> -Propylglutaric acid. <i>α-iso</i> -Propylglutaric acid. <i>β-iso</i> - " " " Suberic acid. Succinic acid diethyl ester. <i>iso</i> -Succinic acid diethyl ester. Tetramethyl-succinic acid. <i>aaa'</i> -Trimethyl-glutaric acid. <i>αββ</i> - " " " Trimethyl-succinic acid mono methyl ester.
$C_8H_{14}O_5$	<i>α</i> -Dimethyl-dihydroxy-adipic acid. <i>γ</i> - " " " " d-Tartaric acid diethyl ester.
$C_8H_{16}O_2$	Butyric acid <i>iso</i> -butyl ester. <i>iso</i> -Butyric acid <i>iso</i> -butyl ester. Caprylic acid. Propionic acid amyl ester. Valeric acid propyl ester.
$C_8H_{16}O_3$	<i>α</i> -Dimethyl- <i>β-iso</i> -propyl-ethylenelactic acid. Di- <i>iso</i> -propyl-glycollic acid.
$C_8H_{17}N$	d-Coniine.
$C_8H_{18}O$	Octyl alcohol.
$C_8H_{19}N$	Di- <i>iso</i> -butyl amine.

8 III.

$C_8H_4O_4Cl_2$	3,6-Dichloro- <i>o</i> -phthalic acid.
$C_8H_4N_8Mo$	Molybdenum cyanic acid.
$C_8H_5O_2N$	<i>o</i> -Aminobenzoyl-formic acid anhydride. <i>m</i> -Cyanobenzoic acid. Phthalimide.
$C_8H_5O_3N$	2-Pyrrolepyrrolacemic acid anhydride.
$C_8H_5O_4Cl$	4-Chloro- <i>o</i> -phthalic acid.
$C_8H_5O_4Br$	2-Bromo- <i>p</i> -phthalic acid.
$C_8H_5O_5N$	2-Aldehydo-3-nitrobenzoic acid. 2- " -5- " "
$C_8H_5O_6N$	3-Nitro- <i>o</i> -phthalic acid. 4- " - <i>o</i> - " " 2- " - <i>p</i> - " " Pyridine-2,3,4-tricarboxylic acid. " -2,3,5- " " " -3,4,5- " "
$C_8H_5O_6N_5$	Purpuric acid.

$C_8H_6ON_2$	Benzoic acid cyanoamide.
$C_8H_6O_2N_2$	Isatoxime.
$C_8H_6O_3Cl_2$	2-Methoxy-3,5-dichloro-benzoic acid.
$C_8H_6O_4Cl_2$	3,4-Dihydroxy-2,5-dichloro-benzoic acid methyl ester.
	3,4-Dihydroxy-5,6-dichloro-benzoic acid methyl ester.
$C_8H_6O_4S$	Thienylpyrroacemic acid.
$C_8H_6O_5Cl_2$	2,6-Dichloro-gallic acid methyl ester.
$C_8H_6O_5Br_2$	2,6-Dibromo-gallic acid methyl ester.
$C_8H_6O_5N_4$	Alloxantine.
$C_8H_7O_2N$	Diamino-stilbene dicarboxylic acid.
$C_8H_7O_2N_2$	1-Phenyl-urazole.
$C_8H_7O_3N$	o-Aminobenzoyl-formic acid.
	1 ^a -Nitroacetophenone.
	Oxanilic acid.
	Phenylglyoxylic acid <i>anti</i> oxime.
	“ “ <i>syn</i> “
	o-Phthalic acid mono amide.
$C_8H_7O_3Cl$	3-Methoxy-6-chlorobenzoic acid.
$C_8H_7O_4N$	2-Amino-p-phthalic acid.
	2-Methylpyridine-3,5-dicarboxylic acid.
	Pyridine-2,3-dicarboxylic acid 2-mono methyl ester.
	“ -2,3- “ “ 3- “ “ “
	“ -3,4- “ “ 3- “ “ “
	“ -3,4- “ “ 4- “ “ “
	2-Pyrrolepyrroacemic acid.
$C_8H_7O_4Br$	Bromodehydracetic acid.
$C_8H_7O_5N$	o-Nitrophenoxy-acetic acid.
	p- “ “ “
$C_8H_7O_5Cl$	2-Chlorogallic acid methyl ester.
$C_8H_7O_6N$	Nitrovanillic acid.
$C_8H_8O_3N_2$	Imino-m-nitrobenzoic acid methyl ester.
$C_8H_8O_4S$	Phenylsulphone-acetic acid.
$C_8H_8O_5S$	m-Sulphobenzoic acid α-mono methyl ester.
	m- “ “ β- “ “ “
$C_8H_8O_6N_6$	Murexide.
C_8H_9ON	Acetanilide.
	Acetophenone oxime.
	Iminobenzoic acid methyl ester.
	Phenylacetic acid amide.
$C_8H_9O_2N$	o-Aminobenzoic acid methyl ester.
	m- “ “ “ “
	p- “ “ “ “

$C_8H_9O_2N$	<i>anti</i> -Anisaldoxime. Carbamic acid benzyl ester. o-Methylamino-benzoic acid. m- " " " p- " " " Phenylamino-acetic acid.
$C_8H_9O_2N_5$	Nitro-acetaldehyde phenylhydrazone.
$C_8H_9O_3N$	o-Aminophenyl methyl carbonate. p- " " " Anishydroxamic acid.
$C_8H_9O_4N$	2,4-Dimethyl-pyrrole-3,5-dicarboxylic acid. 2,5- " " -3,4- " " Haematinic imide.
$C_8H_{10}ON_2$	Nitro-hydroquinone dimethyl ether. O-Methyl-N-phenyl- <i>pseudo</i> -urea. p-Nitroso dimethyl aniline.
$C_8H_{10}O_2N_4$	Caffeine.
$C_8H_{10}O_3S$	p-Tolubenzyl sulphonic acid. 1,4-Xylene-2-sulphonic acid. o- " ?- " "
$C_8H_{10}O_4N_4$	Theine.
$C_8H_{10}O_7N_6$	Ammonium purpurate.
$C_8H_{10}NCl$	m-Chloro-dimethyl-aniline.
$C_8H_{11}ON$	m-Dimethyl-aminophenol. o-Phenetidine. p- "
$C_8H_{11}O_2N_5$	8-Aminocaffeine.
$C_8H_{11}O_3N$	Cyanoacetoacetic acid propyl ester. Cyanobutyrylacetic acid methyl ester. Cyano- <i>iso</i> -butyrylacetic acid methyl ester.
$C_8H_{11}O_4N$	Cyanomalonic acid diethyl ester.
$C_8H_{12}O_3N_2$	5,5-Diethyl-barbituric acid.
$C_8H_{12}NCl$	Ethyl- α -picolinium chloride. Methyllutidinium chloride.
$C_8H_{13}O_4N$	Tropic acid.
$C_8H_{15}ON$	Tropine.
$C_8H_{16}O_3N_2$	Leucylaminoacetic acid.
$C_8H_{17}O_2N$	Aminocaproic acid ethyl ester.
$C_8H_{20}O_4Si$	Silicic acid tetra ethyl ester.
$C_8H_{20}ClP$	Tetraethyl phosphonium chloride.
$C_8H_{21}ON$	Tetraethyl ammonium hydroxide. Trimethyl- <i>iso</i> -amyl ammonium hydroxide.

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$C_4H_{21}OP$	Tetraethyl phosphonium hydroxide.
$C_4H_{21}OSb$	Tetraethyl stibonium hydroxide.
$C_4H_{21}OAs$	Tetraethyl arsonium hydroxide.
$C_8N_8K_4Mo$	Potassium molybdenum cyanide.

8 IV.

$C_6H_4ON_3Br$	p-Bromophenyl-cyanourea.
$C_6H_4O_3NCl$	o-Chloro-oxanilic acid.
	p- " " "
$C_6H_4O_5ClBr$	2-Chloro-6-bromogallic acid methyl ester.
$C_6H_7ON_3S$	1-Phenyl-3-thio-urazole.
C_6H_5ONBr	p-Bromo-acetanilide.
$C_6H_5O_4NS$	Benzene sulphone-aminoacetic acid.
$C_6H_{10}O_5N_2S$	Nitro-dimethyl-aniline sulphonc acid.
$C_6H_{11}O_5NS$	Dimethyl-aniline-4-sulphonic acid.
	Ethylaniline-3-sulphonic acid.
	" -4- " "
	1,4,2-Xylidine-5-sulphonic acid.

9 I.

C_9H_{12}	Cumene.
	Mesitylene.

9 II.

$C_9H_6O_2$	Coumarin.
	Phenylpropionic acid.
$C_9H_6O_5$	Phthalonic acid.
$C_9H_6O_6$	Trimesic acid.
C_9H_7N	Quinoline.
	iso-Quinoline.
C_9H_8O	Cinnamic aldehyde.
$C_9H_8O_2$	Atropic acid.
	Cinnamic acid.
	allo-Cinnamic acid.
	iso- " "
$C_9H_8O_3$	o-Coumaric acid.
	m- " "
	p- " "
$C_9H_8O_4$	o-Acetoxy-benzoic acid.

$C_9H_8O_4$	m-Acetoxy-benzoic acid.
	p- " " "
	Caffeic acid.
	Homophthalic acid.
	o-Phthalic acid mono methyl ester.
	Umbellic acid.
	<i>sym.</i> -Uvitic acid.
$C_9H_8O_5$	4-Hydroxy-o-phthalic acid 1-mono methyl ester.
	4- " -o- " " 2- " " "
	2- " -p- " " 1- " " "
	2- " -p- " " 4- " " "
	4-Methoxy-m-phthalic acid.
$C_9H_8O_6$	Carboxydehydroacetic acid.
$C_9H_8N_2$	1-Phenyl pyrazole.
$C_9H_{10}O$	Cinnamic alcohol.
	Ethylphenyl ketone.
$C_9H_{10}O_2$	Benzoic acid ethyl ester.
	2,4-Dimethyl-benzoic acid.
	2,5- " " "
	3,5- " " "
	o-Ethylbenzoic acid.
	Hydratropic acid.
	Hydrocinnamic acid.
$C_9H_{10}O_3$	o-Ethoxy-benzoic acid.
	m- " " "
	p- " " "
	m-Hydrocoumaric acid.
	p- " " "
	5-Methoxy-o-toluic acid.
	4- " -m- " "
	6- " -m- " "
	3- " -p- " "
	α -Phenoxy-propionic acid.
	β - " " " "
	Phenylglycollic acid methyl ester.
	β -Phenyl- α -hydroxy-propionic acid.
	β - " - β - " " "
	l-Phenyl-methoxy-acetic acid.
	Phloretic acid.
	Tropic acid.
	p-Xyletic acid.
$C_9H_{10}O_4$	Dehydrodiacetyl-laevulinic acid.
	Veratric acid.
$C_9H_{10}O_5$	Gallic acid ethyl ester.

$C_9H_{12}O$	Ethylbenzyl ether.
$C_9H_{12}O_4$	Diallyl-malonic acid.
$C_9H_{12}O_6$	Camphoronic acid.
$C_9H_{12}S$	Ethylbenzyl sulphide.
$C_9H_{12}N$	<i>sym.-pseudo</i> -Cumidine.
	Dimethyl-benzylamine.
	Dimethyl-o-toluidine.
	“ -m- “
	“ -p- “
	Methylethylaniline.
$C_9H_{14}O$	Phorone.
$C_9H_{14}O_2$	<i>iso</i> -Campholytic acid.
	<i>cis-trans</i> -Campholytic acid.
$C_9H_{14}O_3$	Camphononic acid.
	<i>iso</i> -Octinic acid.
$C_9H_{14}O_4$	Allylpropylmalonic acid.
	Allyl- <i>iso</i> -propylmalonic acid.
	Camphopyric acid.
	<i>p-sym.</i> -Ethylallylsuccinic acid.
	<i>meso-sym.</i> -Ethylallylsuccinic acid.
	<i>sym.</i> -Tetramethyl- β -hydroxy-glutaric acid lactone.
	m. p. 120°-124°.
	<i>sym.</i> -Tetramethyl- β -hydroxy-glutaric acid lactone.
	m. p. 140°-141°.
$C_9H_{14}O_5$	Acetylmalonic acid diethyl ester.
$C_9H_{14}O_6$	Acetic acid glyceryl ester.
	l-Camphoronic acid.
	<i>aa'</i> -Dimethyl- β -acetoxy-glutaric acid.
	$\alpha\delta$ -Dimethyl-butane- $\alpha\beta\delta$ -tricarboxylic acid.
	<i>aa</i> -Dimethyl-tricarballic acid α -mono methyl ester.
	<i>aa</i> -Dimethyl-tricarballic acid ?-mono methyl ester.
	Methylethylcarboxylglutaric acid.
	Propyltricarballic acid.
	<i>iso</i> -Propyltricarballic acid.
	Terpylonic acid.
	$\alpha\alpha\gamma$ -Trimethyl-tricarballic acid.
	???- “ “ “ “
$C_9H_{14}O_7$	β -Hydroxy-camphoronic acid.
$C_9H_{16}O_2$	Cyclohexane-propionic acid.
	1,3-Dimethyl-cyclohexane-3-carboxylic acid.
	<i>cis</i> -1,3-Dimethyl-cyclohexane-5-carboxylic acid.
	<i>trans</i> -1,3- “ “ -5- “ “

$C_9H_{16}O_2$	1-Methylcyclohexanè-3-acetic acid.
$C_9H_{16}O_3$	Cineolenic acid.
$C_9H_{16}O_4$	Azelaic acid.
	<i>α-sym.</i> -Diethyl-glutaric acid.
	<i>β-sym.</i> - " " "
	Diethyl-malonic acid mono ethyl ester.
	<i>para-aa'</i> -Dimethyl-pimelic acid.
	<i>anti-aa'</i> - " " "
	Dimethyl-propylsuccinic acid.
	<i>aa'</i> -Dimethyl- <i>α'</i> - <i>iso</i> -propylsuccinic acid.
	Dipropyl-malonic acid.
	<i>cis-aa'</i> -Methyl- <i>iso</i> -butyl-succinic acid.
	<i>trans-aa'</i> - " " " "
	<i>α-sym.</i> -Methylpropylglutaric acid.
	<i>β-sym.</i> - " " "
	<i>α</i> -Propyladipic acid.
	Tetramethyl-succinic acid mono methyl ester.
$C_9H_{16}O_5$	<i>sym.</i> -Tetramethyl- <i>β</i> -hydroxy-glutaric acid.
$C_9H_{18}O_3$	Butyric acid amyl ester.
	Pelargonic acid.
	Valeric acid <i>iso</i> -butyl ester.
$C_9H_{18}O_3$	Dimethyl- <i>β-iso</i> -butylethylenelactic acid.
$C_9H_{21}N$	Tripropyl amine.

9 III.

$C_9H_4OBr_2$	2,3-Dibromo-1-indone.
$C_9H_5O_3N$	<i>iso</i> -Nitrosodiketo-hydrindene.
$C_9H_5O_4N$	<i>o</i> -Nitro-phenylpropionic acid.
$C_9H_5O_5N$	Pyridine-2,3,4,5-tetracarboxylic acid.
$C_9H_4O_3N_2$	Phenylazoxazolecarboxylic acid.
	Phenyloximino- <i>syn</i> -oxazolone.
C_9H_7ON	Carbostyryl.
C_9H_7OCl	Cinnamyl chloride.
$C_9H_7O_2N$	Pr-2-(<i>α</i>)-Indolecarboxylic acid.
	Pr-3-(<i>β</i>)- " "
	3-Phenylisoxazolone(5).
$C_9H_7O_2Cl$	1 ¹ -Chlorocinnamic acid.
	1 ² -Chlorocinnamic acid.
	<i>β</i> -Chlorocinnamic acid.
	<i>allo-β</i> -Chlorocinnamic acid.
$C_9H_7O_2Br$	<i>α</i> -Bromocinnamic acid.
	<i>β</i> - " "
$C_9H_7O_3N$	2,3,4-Trihydroxy-quinoline.

$C_9H_7O_3N_2$	1-Phenyl-5-pyrrodiazolone-3-carboxylic acid.
$C_9H_7O_4N$	o-Nitrocinnamic acid.
	m- " "
	p- " "
$C_9H_7O_4Br$	2-Bromo-p-phthalic acid 1-mono methyl ester.
	2- " -p- " " 4- " " "
$C_9H_7O_5N$	2-Methylpyridine-3,5,6-tricarboxylic acid.
	4- " -3,5,6- " "
	3-Nitro-o-phthalic acid 1-mono methyl ester.
	3- " -o- " " 2- " " "
	4- " -o- " " ?- " " "
	2- " -p- " " 1- " " "
	2- " -p- " " 4- " " "
$C_9H_5O_3N_2$	α -Methyl-m-benzimideazolecarboxylic acid.
	m-Methyl- α -benzimidazolecarboxylic acid.
$C_9H_5O_4N_2$	Phenylglyoximecarboxylic acid.
	Phthaluric acid.
$C_9H_5O_4Cl_2$	5,6-Dichloro-veratric acid.
$C_9H_5O_5Cl_2$	2,6-Dichloro-gallic acid ethyl ester.
$C_9H_5O_5Br_2$	2,6-Dibromo-gallic acid ethyl ester.
$C_9H_5O_2N_3$	2-Methyl-1-phenyl-urazole.
	4- " -1- " "
$C_9H_9O_2N$	o-Acetylamino-benzoic acid.
	m- " " "
	p- " " "
	Benzoylamino-acetic acid.
	Homo-o-phthalic acid 1-mono amide.
	" -o- " " 2- " "
	Malonanilic acid.
	p-Tolyloxamic acid.
$C_9H_9O_5Cl$	2-Ethoxy-5-chlorobenzoic acid.
$C_9H_9O_4N$	2-Amino-p-phthalic acid 4-mono methyl ester.
	?- " -p- " " ?- " " "
	2,4-Dimethyl-pyridine-3,5-dicarboxylic acid.
	2,6- " " -3,5- " "
	2-N-Methylamino-p-phthalic acid.
	Phenylglycine-o-carboxylic acid.
	Pyridine-3,4-dicarboxylic acid mono ethyl ester.
$C_9H_9O_5Cl$	2-Chlorogallic acid ethyl ester.
$C_9H_9O_6N$	6-Nitroveratric acid.
$C_9H_{10}O_3N_2$	Imino-m-nitrobenzoic acid ethyl ester.
$C_9H_{10}O_4S$	α -Phenylsulphone-propionic acid.
$C_9H_{11}ON$	Acetic acid benzylamide.
	p-Acettoluide.

$C_9H_{11}ON$	Iminobenzoic acid ethyl ester.
	Imino-o-toluic acid methyl ester.
$C_9H_{11}O_2N$	o-Aminobenzoic acid ethyl ester.
	p- " " " "
	α -Anilinopropionic acid.
	β - " "
	o-Dimethyl-aminobenzoic acid.
	m- " "
	p- " "
	o-Methylamino-benzoic acid methyl ester.
	p- " " " " "
	<i>inact.</i> -Phenyl- α -aminopropionic acid.
	Phenylcarbamic acid ethyl ester.
	o-Tolylamino-acetic acid.
	p- " " "
$C_9H_{11}O_2N_2$	Nitropropionic aldehyde phenylhydrazone.
$C_9H_{11}O_2N$	o-Aminophenyl ethyl carbonate.
	p- " " "
	p-Hydroxy-phenyl- α -aminopropionic acid.
	o-Hydroxy-phenyl urethane.
$C_9H_{12}ON_2$	<i>pseudo</i> -Cumene diazonium hydroxide.
	O-Ethyl-N-phenyl <i>pseudo</i> -urea.
$C_9H_{12}O_2S$	2- <i>pseudo</i> -Cumene-5-sulphonic acid.
$C_9H_{12}O_2N$	Anhydroecgonine.
$C_9H_{12}O_3N$	Cyanoacetoacetic acid <i>iso</i> -butyl ester.
	Cyano- <i>iso</i> -valerylacetic acid methyl ester.
$C_9H_{14}O_3N_2$	Trimethyl-m-nitrophenyl ammonium hydroxide.
$C_9H_{16}ON$	Trimethyl-phenyl ammonium hydroxide.
$C_9H_{16}O_2N$	o-Trimethyl-aminophenol.
	m- " "
	p- " "
$C_9H_{16}O_2N$	Ecgonine.
$C_9H_{18}NS_2$	Di- <i>iso</i> -butyl-dithio-carbamic acid.
$C_9H_{20}NCl$	Triethyl-allyl ammonium chloride.
$C_9H_{22}NCl$	Triethyl-propyl ammonium chloride.

9 IV.

$C_9H_5O_5ClBr$	2-Chloro-6-bromogallic acid ethyl ester.
$C_9H_9ON_2S$	4-Methyl-1-phenyl-3-thio-urazole.
	1-Phenyl-3-methylthio-urazole.
$C_9H_9O_7NS$	4-Nitro-2-sulphobenzoic acid ethyl ester.
$C_9H_{11}O_4NS$	o-Toluenesulphone-aminoacetic acid.
	p- " " "

10 I.

$C_{10}H_8$	Naphthalene.
$C_{10}H_{14}$	Cymene.
$C_{10}H_{16}$	Dipentene.
	Limonene.

10 II.

$C_{10}H_6O_3$	2-Hydroxy-1,4-naphthoquinone.
$C_{10}H_6O_5$	Pyromellitic acid.
$C_{10}H_7Br$	1-(α)-Bromonaphthalene.
$C_{10}H_8O$	α -Naphthol.
	β - " "
$C_{10}H_8O_2$	1,7-Dihydroxy-naphthalene.
$C_{10}H_8O_4$	Benzalmalonic acid.
	Benzoylpyroracemic acid.
$C_{10}H_8O_5$	Phthalonic acid mono methyl ester.
$C_{10}H_9N$	Lepidine.
	α -Naphthyl amine.
	β - " "
	Quinaldine.
	p-Tolu quinoline.
$C_{10}H_{10}O_2$	Benzoylacetone.
$C_{10}H_{10}O_3$	β -Benzoylpropionic acid.
	Cubebin.
	Furyldihydro-resorcinol.
$C_{10}H_{10}O_4$	Benzylmalonic acid.
	Homo-o-phthalic acid 1-mono methyl ester.
	" -o- " " 2- " " "
	o-Phenylenediacetic acid.
	Phenylsuccinic acid.
	o-Phthalic acid mono ethyl ester.
$C_{10}H_{10}O_5$	Benzyltartronic acid.
	4-Hydroxy-o-phthalic acid dimethyl ester.
	Opianic acid.
$C_{10}H_{10}O_6$	Apiolic acid.
	Hemipinic acid.
	m-Hemipinic acid.
$C_{10}H_{12}O$	Anethole.
$C_{10}H_{12}O_2$	Cuminic acid.
	Eugenol.
	2,3,4-Trimethyl-benzoic acid.
	2,4,5- " " "
	2,4,6- " " "

$C_{10}H_{12}O_3$	Cumophenolcarboxylic acid. 3-Ethoxy-p-toluic acid. α -Methyl- β -phenyl- β -hydroxy-propionic acid. α -Phenoxy-butyric acid. α -Phenoxy- <i>iso</i> -butyric acid. Phenylethoxyacetic acid.
$C_{10}H_{12}O_3$	1,1,3,3-Hexamethylene-tetracarboxylic acid.
$C_{10}H_{14}O$	<i>iso</i> -Butylphenol. Carvacrol. Carvone. Thymol.
$C_{10}H_{14}O_2$	Camphor quinone.
$C_{10}H_{14}O_4$	Dimethyl-hydroresorcylic acid methyl ester. Di- <i>iso</i> -propylene-succinic acid. Methylhydroresorcylic acid ethyl ester.
$C_{10}H_{14}N_2$	Nicotine.
$C_{10}H_{16}N$	Diethyl-aniline.
$C_{10}H_{16}O$	d-Camphor.
$C_{10}H_{16}O_2$	α -Campholenic acid. Fencholenic acid.
$C_{10}H_{16}O_3$	Sebacic acid anhydride.
$C_{10}H_{16}O_4$	d-Camphoric acid. l- " " <i>inact.</i> -Camphoric acid. <i>meso</i> - " " d- <i>iso</i> - " " l- <i>iso</i> - " " <i>inact.</i> - <i>iso</i> -Camphoric acid. <i>aaa'</i> -Tetramethyl-dihydro-muconic acid.
$C_{10}H_{16}O_5$	Cineolic acid.
$C_{10}H_{16}O_6$	Methanetricarboxylic acid triethyl ester. Propyl- <i>iso</i> -butenyltricarboxylic acid. α -Tetramethyl-tricarballic acid. β - " " " $\alpha\alpha\gamma\gamma$ -Tetramethyl-tricarballic acid.
$C_{10}H_{18}O$	d-Borneol. Citronellal. Cineole. l-Menthone.
$C_{10}H_{18}O_2$	Campholic acid.
$C_{10}H_{18}O_3$	Oxymenthyllic acid. Pulegonic acid.
$C_{10}H_{18}O_4$	Dihydro-camphoric acid. α -Dihydroxy-dihydro-campholenic acid.

$C_{10}H_{18}O_4$	<i>aa</i> -Dimethyl- α' - <i>iso</i> -butylsuccinic acid. <i>cis-sym.</i> -Dipropyl-succinic acid. <i>trans-sym.</i> - " " " <i>cis-sym.</i> -Di- <i>iso</i> -propyl-succinic acid. <i>trans-sym.</i> - " " " " Heptylmalonic acid. <i>cis-a</i> -Methyl- α' - <i>iso</i> -amyl-succinic acid. <i>trans-a</i> - " - α' - <i>iso</i> - " " " <i>cis-a</i> -Propyl- α' - <i>iso</i> -propyl-succinic acid. <i>trans-a</i> - " - α' - <i>iso</i> - " " " Sebacic acid. Suberic acid mono ethyl ester.
$C_{10}H_{20}O$	Menthol.
$C_{10}H_{20}O_2$	Acetic acid capryl ester. Capric acid. Caprylic acid ethyl ester. Valeric acid amyl ester.
$C_{10}H_{20}O_3$	α - <i>iso</i> -Propyl- β - <i>iso</i> -butylhydracrylic acid.
$C_{10}H_{21}N$	Menthyl amine.
$C_{10}H_{22}O$	Amyl ether.
$C_{10}H_{22}N$	Di- <i>iso</i> -amyl amine.

10 III.

$C_{10}H_5O_3Br$	2-Hydroxy-3-bromo- α -naphthoquinone.
$C_{10}H_5O_{10}N$	Pyridinepentacarboxylic acid.
$C_{10}H_7O_3N$	Cinchoninic acid. 1-(α)-Nitronaphthalene. 4-Nitroso-1-naphthol. 2- " -1- " 1- " -2- " Quinaldinic acid.
$C_{10}H_7O_3N$	p-Hydroxy-quinoline-o-carboxylic acid.
$C_{10}H_7O_4N$	Phenylisoxazolecarboxylic acid.
$C_{10}H_8ON_2$	o-Phthalylamino-acetic acid. <i>anti</i> - β -Diazo naphthalene. β -Naphthylnitroso amine.
$C_{10}H_8O_3S$	α -Naphthalene sulphonic acid. β - " " "
$C_{10}H_8O_4Cl_2$	3,6-Dichloro-o-phthalic acid mono ethyl ester.
$C_{10}H_9O_2N$	Pr-2-Methyl-indole-2-carboxylic acid. 3- " " -3- " "
$C_{10}H_9O_2N_3$	3-Methyl-1-phenyl-4- <i>iso</i> -nitroso-5-pyrazolone.
$C_{10}H_9O_3N$	Fumaranilic acid.

$C_{10}H_9O_5N_3$	1-Phenyl-5-hydroxy-1,2,3-triazole-4-carboxylic acid methyl ester.
$C_{10}H_9O_5N$	4-Acetylamino-m-phthalic acid.
	2- " -p- " "
$C_{10}H_9O_5N$	4-Nitro-o-phthalic acid 1-mono ethyl ester.
	4- " -o- " " 2- " " "
$C_{10}H_9O_7N$	Nitroopianic acid.
$C_{10}H_9O_5N$	Nitrohemipinic acid.
$C_{10}H_{10}ON_3$	3-Methyl-1-phenyl-5-pyrazolone.
$C_{10}H_{10}O_2N_2$	Ethyl- <i>pseudo</i> -isatin- β -oxime.
$C_{10}H_{10}O_4N_2$	Oxalacetic acid phenylhydrazone.
$C_{10}H_{11}ON$	Methylquinolinium hydroxide.
	Methyl- <i>iso</i> -quinolinium hydroxide.
$C_{10}H_{11}O_2N_3$	1-Phenyl-3-ethoxy-urazole.
$C_{11}H_{11}O_2N$	Benzoylamino-propionic acid.
	<i>labile</i> β -Benzoylpropionic acid oxime.
	<i>stabile</i> β - " " "
	Methylbenzoylamino-acetic acid.
	Phenaceturic acid.
	Phenylacetylamino-acetic acid.
	Succinanilic acid.
	o-Toluric acid.
	m- " "
	p- " "
$C_{10}H_{11}O_4N$	Anisuric acid.
	3-Nitrocuminic acid.
	Phenylglycine-o-carboxylic acid <i>eso</i> mono methyl ester.
	Phenylglycine-o-carboxylic acid <i>exo</i> mono methyl ester.
	Phenyliminodiacetic acid.
$C_{10}H_{11}O_5N$	Hemipinic acid 1-mono amide.
	" " 2- " "
$C_{10}H_{13}ON$	Iminobenzoic acid <i>norm.</i> -propyl ester.
	" " <i>iso</i> - " "
	Imino-phenylacetic acid ethyl ester.
	Imino-p-toluic acid ethyl ester.
$C_{10}H_{13}O_2N$	α -Anilinobutyric acid.
	α -Anilino- <i>iso</i> -butyric acid.
	β - " " " "
	o-Dimethyl-aminobenzoic acid methyl ester.
	m- " " " " "
	p- " " " " "
	α -o-Toluidinopropionic acid.

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$C_{10}H_{13}O_2N$	α -p-Toluidinopropionic acid.
	β -p- " " "
	o-Trimethyl-aminobenzoic acid anhydride.
	m- " " " "
	p- " " " "
$C_{10}H_{13}O_2N$	o-Methoxy-phenyl urethane.
	4-Methyl-2-aminophenyl ethyl carbonate.
	5- " -2- " " "
	6- " -2- " " "
	3-Methyl-6-hydroxy-phenyl urethane.
$C_{10}H_{14}O_2N_2$	Glycocoll-p-phenetidine.
$C_{10}H_{14}NCl$	Diethyl-m-chloroaniline.
$C_{10}H_{14}O_2N$	Camphoric acid imide.
$C_{10}H_{15}O_2N$	Cyanoacetoacetic acid <i>iso</i> -amyl ester.
$C_{10}H_{16}O_{11}Fe_2$	Diferri-pentaacetyl hydroxide.
$C_{10}H_{16}NCl$	Dimethyl-ethylphenyl ammonium chloride.
$C_{10}H_{17}ON$	Camphor oxime.
	Dimethyl-ethylphenyl ammonium hydroxide.
$C_{10}H_{17}O_2N$	Camphoric acid α -mono amide.
	" " β - " "
$C_{10}H_{17}O_5N_3$	Antipeptone α .
$C_{10}H_{18}O_5N_4$	Triglycyl-aminoacetic acid ethyl ester.
$C_{10}H_{24}NCl$	Triethyl- <i>iso</i> -butyl ammonium chloride.
$C_{10}H_{25}ON$	Triethyl- <i>iso</i> -butyl ammonium hydroxide.

10 IV.

$C_{10}H_6O_5N_2S$	2,4-Dinitro-1-naphthol-7-sulphonic acid.
$C_{10}H_9O_5NS$	1-Naphthylamine-2-sulphonic acid.
	1- " -4- " "
	1- " -5- " "
	1- " -6- " "
	1- " -7- " "
	1- " -8- " "
	2- " -1- " "
	2- " -5- " "
	2- " -6?- " "
	2- " -7- " "
	2- " -8- " "
$C_{10}H_9O_4NS$	5-Amino-1-naphthol-3-sulphonic acid.
	6- " -1- " -3- " "
	6- " -2- " -4- " "
	8- " -1- " -4- " "
	8- " -1- " -5- " "

$C_{10}H_9O_6NS_2$	1-Naphthylamine-2,4-disulphonic acid.
1-	" -2,5?- " "
1-	" -4,6- " "
1-	" -4,7- " "
1-	" -4,8- " "
1-	" -5,7?- " "
2-	" -3,6- " "
2-	" -4,8- " "
2-	" -6,8- " "
$C_{10}H_9O_7NS_2$	8-Amino-1-naphthol-3,6-disulphonic acid.
$C_{10}H_9O_6NS_3$	1-Naphthylamine-2,4,7-trisulphonic acid.
1-	" -3,6,8- " "
$C_{10}H_{10}O_3NCl$	Chloroacetyl-phenyl amino-acetic acid.
	o-Chlorosuccinanilic acid.
	m- " "
	p- " "
$C_{10}H_{10}O_3NBr$	Acetyl-bromophenyl amino-acetic acid.
	Bromoacetyl-phenyl amino-acetic acid.
$C_{10}H_{11}ON_2S$	1-Phenyl-3-ethylthio-urazole.
$C_{10}H_{11}O_6NS$	Benzenesulphone-aminosuccinic acid.
$C_{10}H_{13}O_4NS$	m-Xylenesulphone-aminoacetic acid.
$C_{10}H_{13}O_8N_4P$	Inosinic acid.
$C_{10}H_{15}O_4BrS$	o-Bromocamphor sulphonic acid.

10 V.

$C_{10}H_{14}O_3ClBrS$ Bromocamphorsulphonic chloride.

11 II.

$C_{11}H_7N$	α -Naphthonitrile.
	β - " "
$C_{11}H_8O_2$	α -Naphthoic acid.
	β - " "
$C_{11}H_8O_3$	α -Hydroxy-naphthoic acid.
$C_{11}H_8O_4$	Carminic acid.
$C_{11}H_{10}O_2$	Δ^2 -Dihydro- α -naphthoic acid.
	Δ^1 - " - α - " "
	Δ^3 - " - β - " "
	Δ^2 - " - β - " "
$C_{11}H_{10}O_3$	Phenyltetric acid.
$C_{11}H_{10}O_4$	Phenylitaconic acid.
	Phenylparaconic acid.
	iso-Phenylparaconic acid.

$C_{11}H_{10}O_5$	β -Benzoyl- <i>iso</i> -succinic acid.
$C_{11}H_{10}O_7$	Apionylglyoxylic acid.
$C_{11}H_{12}O_2$	Cinnamic acid ethyl ester.
	Ar- α -Tetrahydro-naphthoic acid.
	β -Tetrahydro-naphthoic acid.
$C_{11}H_{12}O_3$	Benzoylacetic acid ethyl ester.
	Mesityleneglyoxylic acid.
$C_{11}H_{12}O_4$	Benzylsuccinic acid.
	Homo-o-phthalic acid 1-mono ethyl ester.
	“ “ 2- “ “ “
	Mesitylenedicarboxylic acid.
	Methylbenzylmalonic acid.
	<i>fum.-sym.</i> -Methylphenylsuccinic acid.
	<i>mal.-sym.</i> - “ “
	Phenylglutaric acid.
	Phenylsuccinic acid α -mono methyl ester.
	“ “ β - “ “ “
$C_{11}H_{12}O_5$	Hemipinic acid 1-mono methyl ester.
	“ “ 2- “ “ “
$C_{11}H_{12}O_7$	Carminic acid.
	Piscidic acid.
$C_{11}H_{14}O_2$	Benzoic acid <i>iso</i> -butyl ester.
	2,3,4,5-Tetramethyl-benzoic acid.
	2,3,4,6- “ “ “
	2,3,5,6- “ “ “
	p-Thymotic aldehyde.
$C_{11}H_{14}O_3$	α -Ethyl- β -phenyl- β -hydroxy-propionic acid.
	α -Phenoxy- <i>iso</i> -valeric acid.
	Phenylhydroxy-pivalic acid.
	Phenylpropoxyacetic acid.
$C_{11}H_{14}O_4$	3,4-Diethoxy-benzoic acid.
$C_{11}H_{16}O_3$	Camphorcarboxylic acid.
$C_{11}H_{16}O_8$	2,6-Dimethyl-pentane-2,6-tetracarboxylic acid.
$C_{11}H_{17}N$	Diethyl-benzyl amine.
	Diethyl-m-toluidine.
$C_{11}H_{18}O_3$	<i>cis</i> -Borneolcarboxylic acid.
	<i>cis-trans</i> -Borneolcarboxylic acid.
$C_{11}H_{18}O_4$	d-Camphoric acid mono <i>allo</i> -methyl ester.
	d-Camphoric acid mono o-methyl ester.
$C_{11}H_{18}O_5$	<i>sym.</i> -Tetramethyl- β -acetoxy-glutaric acid.
$C_{11}H_{20}O_4$	2,6-Diethyl-pimelic acid.
	<i>aa</i> -Dimethyl- α' - <i>iso</i> -amylsuccinic acid.
	<i>cis-sym.</i> -Di- <i>iso</i> -propyl-succinic acid mono methyl ester.

$C_{11}H_{20}O_4$	<i>trans-sym.</i> -Di- <i>iso</i> -propyl-succinic acid mono methyl ester. Octylmalonic acid.
$C_{11}H_{22}O_2$	Pelargonic acid ethyl ester.
$C_{11}H_{22}O_3$	α -Dimethyl- β -hydroxy-pelargonic acid.

11 III.

$C_{11}H_5O_4Br_3$	β -Bromocarmin.
$C_{11}H_5O_2N_2$	3,2'-Dipyridyl-3'-carboxylic acid.
$C_{11}H_9O_3N$	Cyanobenzoylacetic acid methyl ester. Quininic acid.
$C_{11}H_{11}O_2N$	2-Methylindole-3-acetic acid.
$C_{11}H_{11}O_3N$	Citraconanilic acid. Indoxylic acid ethyl ester.
$C_{11}H_{11}O_5N$	2-Acetylamino-p-phthalic acid 4-mono methyl ester. N-Acetylmethylamino-p-phthalic acid. Acetylphenylglycine-o-carboxylic acid. Benzoylamino-succinic acid.
$C_{11}H_{11}O_6N$	Anilinodiacetic-o-carboxylic acid.
$C_{11}H_{12}ON_2$	2,3-Dimethyl-1-phenyl pyrazolone. 3,4 " -1- " "
$C_{11}H_{12}O_4S_2$	Benzylidene di-thioglycollic acid.
$C_{11}H_{12}NI_3$	Ethylquinolinium tri-iodide.
$C_{11}H_{13}O_2N_2$	4-Methyl-1-phenyl-3-ethoxy urazole.
$C_{11}H_{13}O_3N$	α -Acetylanilino-propionic acid. Acetyl-o-tolyl amino-acetic acid. " -p- " " " "
	2-Methylbenzoyl-amino-propionic acid. 4- " " " " "
	o-Tolylsuccinamic acid. p- " " "
$C_{11}H_{13}O_4N$	o-Tolylimino-diacetic acid. p- " " "
$C_{11}H_{14}ON_2$	Cytisine.
$C_{11}H_{15}ON$	Iminobenzoic acid <i>iso</i> -butyl ester.
$C_{11}H_{15}O_2N$	α -o-Toluidinobutyric acid. α -o-Toluidino- <i>iso</i> -butyric acid. β -o- " " " "
	α -p-Toluidinobutyric acid. α -p-Toluidino- <i>iso</i> -butyric acid. β -p- " " " "
$C_{11}H_{15}O_2N_2$	α -Nitro- <i>iso</i> -valeric aldehyde phenylhydrazone. β - " " " " "

$C_{11}H_{16}O_2N_2$	Pilocarpine.
$C_{11}H_{17}O_2N$	o-Trimethyl-aminobenzoic acid methyl ester.
	m- " " " " "
	p- " " " " "
$C_{11}H_{19}O_5N_3$	Antipeptone β .
$C_{11}H_{26}NCl$	Triethyl- <i>iso</i> -amyl ammonium chloride.
$C_{11}H_{27}ON$	Triethyl- <i>iso</i> -amyl ammonium hydroxide.

11 IV.

$C_{11}H_8O_2N_2S$	α -Naphthalene sulphonic acid cyanoamide.
	β - " " " " "
$C_{11}H_{10}O_2N_3Br$	1-p-Bromophenyl-5-hydroxy-1,2,3-triazolecarboxylic acid ethyl ester.
$C_{11}H_{14}O_2NK$	Camphor quinone potassium cyanide derivative.
$C_{11}H_{15}O_4NS$	<i>pseudo</i> -Cumenesulphone-aminoacetic acid.
	m-Xylenesulphone-aminopropionic acid.

12 I.

$C_{12}H_{10}$	Diphenyl.
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12 II.

$C_{12}H_6O_{12}$	Mellitic acid.
$C_{12}H_9N$	Carbazole.
$C_{12}H_9N_3$	Aminophenazine.
$C_{12}H_{10}N_2$	Azobenzene.
$C_{12}H_{11}N$	Diphenyl amine.
$C_{12}H_{11}N_3$	Aminoazobenzene.
$C_{12}H_{12}O_2$	Phenyldihydro-resorcinol.
$C_{12}H_{12}O_4$	Benzylglutaconic acid.
	γ -Methylene- γ -phenylpyrotartaric acid.
	γ -Methyl- γ -phenylitaconic acid.
	γ -Methyl- γ -phenyl- <i>iso</i> -itaconic acid.
$C_{12}H_{12}O_6$	Benzylethenyltricarboxylic acid.
$C_{12}H_{12}O_8$	Diacetyl-diketo-hexamethylene-dicarboxylic acid.
	Dihydroxy-quinonedicarboxylic acid diethyl ester.
$C_{12}H_{12}N_2$	Benzidine.
$C_{12}H_{14}O_3$	β -Phenyl- γ -acetylbutyric acid.
$C_{12}H_{14}O_4$	Ethylbenzylmalonic acid.
	<i>p-sym</i> .-Methylbenzylsuccinic acid.
	<i>meso-sym</i> .-Methylbenzylsuccinic acid.
$C_{12}H_{14}O_5$	Hemipinic acid 1-mono ethyl ester.
	" " 2- " " "
$C_{12}H_{16}O_2$	Benzoic acid amyl ester.

$C_{12}H_{16}O_3$	α - <i>iso</i> -Propyl- β -phenyl- β -hydroxy-propionic acid.
$C_{12}H_{18}O_3$	Camphorcarboxylic acid methyl ester.
$C_{12}H_{16}N$	Dipropyl-aniline.
$C_{12}H_{20}O_3$	Citronellideneacetic acid.
$C_{12}H_{20}O_4$	l- <i>iso</i> -Camphoric acid mono o-ethyl ester.
$C_{12}H_{20}O_3$	$\alpha\gamma$ -Di- <i>iso</i> -propyl-tricarballic acid; m. p. 173°.
	$\alpha\gamma$ - " " " " m. p. 156°.
$C_{12}H_{20}O_7$	Citric acid triethyl ester.
$C_{12}H_{22}O_4$	<i>cis-sym.</i> -Di- <i>iso</i> -butyl-succinic acid.
	<i>trans-sym.</i> - " " " "
	Sebacic acid mono ethyl ester.
	Tetraethyl-succinic acid.
$C_{12}H_{22}O_{11}$	Lactose.
	Maltose.
	Saccharose.
$C_{12}H_{25}N$	l-Ethylmenthyl amine.
$C_{12}H_{27}N$	Tri- <i>iso</i> -butyl amine.

12 III.

$C_{12}H_8O_{12}N_7$	Hexanitro-diphenyl amine.
$C_{12}H_8O_4N_2$	3,2'-Dipyridyl-2,3'-dicarboxylic acid.
$C_{12}H_9O_3N$	3-Phenylpyridinecarboxylic acid. (Bz-2).
$C_{12}H_9N_3S$	Thionine.
$C_{12}H_{10}ON_2$	Azoxybenzene.
	p-Oxyazobenzene.
$C_{12}H_{10}O_2N_2$	p-Azophenol.
$C_{12}H_{11}ON$	Acetnaphthalide.
$C_{12}H_{11}OI$	Diphenyl iodonium hydroxide.
$C_{12}H_{11}O_2N$	α -Naphthylamino-acetic acid.
	β - " " " "
$C_{12}H_{12}O_3N$	Dimethyl-fumaranilic acid.
	Methylcitraconanilic acid.
$C_{12}H_{12}O_3N_3$	1-p-Tolyl-5-hydroxy-1,2,3-triazole-4-carboxylic acid ethyl ester.
$C_{12}H_{12}O_5N$	Benzoylamino-succinic acid α -mono methyl ester.
	" " " β - " " "
$C_{12}H_{14}ON_2$	3-Methyl-1-phenyl-5-ethoxy-pyrazole.
	3,4,4-Trimethyl-1-phenylpyrazolone (5).
$C_{12}H_{15}O_2Br$	d-Phenylbromoacetic acid <i>iso</i> -butyl ester.
$C_{12}H_{15}O_2N$	α -Acetylanilinobutyric acid.
	β -Acetylanilino- <i>iso</i> -butyric acid.
	α -Acetyl-o-toluidinopropionic acid.
	α - " -p- " "

$C_{12}H_{15}O_4N$	Cotarnine.
$C_{12}H_{16}O_2N_2$	1-Phenyl-3,5-diethoxy urazole.
$C_{12}H_{17}ON$	Iminobenzoic acid <i>iso</i> -amyl ester.
$C_{12}H_{21}ON$	Triethyl-phenyl ammonium hydroxide.
$C_{12}H_{23}NI$	Tetrapropyl ammonium iodide.
$C_{12}H_{23}ON$	Tetrapropyl ammonium hydroxide.

12 IV.

$C_{12}H_7ON_2Br_3$	4-Hydroxy-2,4,6-tribromo-azobenzene.
$C_{12}H_8ON_2Br_2$	4-Hydroxy-3,5-dibromo-azobenzene.
$C_{12}H_{10}O_2N_2S$	Azobenzene- <i>p</i> -sulphonic acid.
$C_{12}H_{12}O_4N_2S_2$	Di-benzenesulphonic hydrazide.
$C_{12}H_{12}O_2NS$	Dimethyl-2-naphthylamine-8-sulphonic acid.

13 II.

$C_{12}H_8O$	Fluorenone.
$C_{12}H_9N$	Acridine.
$C_{12}H_{10}O$	Benzophenone.
$C_{12}H_{10}O_2$	Difurfural-acetone.
	<i>o</i> -Hydroxy-benzoic acid phenyl ester.
$C_{12}H_{10}Cl_2$	Diphenyl-dichloro-methane.
$C_{12}H_{11}Br$	Diphenyl-bromomethane.
$C_{12}H_{12}O_6$	Mesitylenediglyoxylic acid.
$C_{12}H_{12}N$	Methyldiphenyl amine.
$C_{12}H_{14}O_4$	Dimethyl-benzylsuccinic acid.
	<i>para</i> -Ethylbenzylsuccinic acid.
	<i>meso</i> - " " "
	Methylbenzylglutaric acid.
	Methylene di-hydroresorcinol.
$C_{12}H_{16}O_6$	Hemipinic acid 1-mono propyl ester.
	" " 2- " " "
$C_{12}H_{18}O_7$	Salicin.
$C_{12}H_{20}O_8$	Diethyl-pentanetetracarboxylic acid.
$C_{12}H_{24}O_4$	2,6-Dipropyl-pimelic acid.
	2,6-Di- <i>iso</i> -propyl-pimelic acid.
	Tetraethyl-succinic acid mono methyl ester.

13 III.

$C_{12}H_9O_4N$	α -Phenylpyridine-dicarboxylic acid.
	β - " " " "
$C_{12}H_{11}ON$	Benzanilide.
	Benzophenone oxime.

$C_{12}H_{11}O_2N$	Phenyldihydro-resorecylic acid nitrile.
$C_{12}H_{12}N_2S$	Thiocarbanilide.
$C_{12}H_{13}ON$	Imino- β -naphthoic acid ethyl ester.
$C_{12}H_{13}O_2N_2$	2-Amino-4-nitro-diphenyl-methyl amine.
$C_{12}H_{14}O_2N_2$	Cotarnine cyanide.
$C_{12}H_{15}O_5N$	Acetylphenylglycine-o-carboxylic acid <i>eso</i> mono ethyl ester.
	Acetylphenylglycine-o-carboxylic acid <i>exo</i> mono ethyl ester.
$C_{12}H_{16}O_5N_2$	α -Phenylhydroxy-diazomalononic acid diethyl ester.
$C_{12}H_{16}NI_3$	Butylquinolinium tri-iodide.
	<i>iso</i> - " "
$C_{12}H_{17}ON$	Trimethyl- α -naphthyl ammonium hydroxide.
	" β - " " "
$C_{12}H_{17}O_2N$	α -Acetyl-o-toluidinobutyric acid.
	β - " -o-toluidino- <i>iso</i> -butyric acid.
	α - " -p-toluidinobutyric acid.
	α - " -p-toluidino- <i>iso</i> -butyric acid.
	β - " -p- " " "
$C_{12}H_{19}O_2N$	Dimethyl-dimethylamino-methyl carbinol benzoate.

13 IV.

$C_{12}H_{11}O_2NS$	Benzene sulphonic acid benzoylamide.
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14 I.

$C_{14}H_{10}$	Anthracene.
	Phenanthrene.

14 II.

$C_{14}H_8O_2$	Anthraquinone.
$C_{14}H_8O_3$	Fluorenone-5-carboxylic acid.
$C_{14}H_8O_4$	Alizarin.
$C_{14}H_8O_5$	Purpurin.
$C_{14}H_8O_6$	Quinalizarin.
$C_{14}H_8O_7$	1,2,4,5,8-Pentahydroxy-anthraquinone.
$C_{14}H_{10}O_2$	Benzil.
$C_{14}H_{10}O_3$	Benzoic acid anhydride.
	<i>o</i> -Benzoylbenzoic acid.
	Diphenylene-glycollic acid.
$C_{14}H_{10}O_4$	Benzoyl peroxide.
	Diphenic acid.
$C_{14}H_{10}O_5$	α -Digallic acid.

$C_{14}H_{10}O_9$	Tannic acid.
$C_{14}H_{11}N$	Methylacridine.
$C_{14}H_{12}O_2$	Benzoin.
$C_{14}H_{12}O_3$	Benzilic acid.
$C_{14}H_{12}O_9$	Tannic acid.
$C_{14}H_{15}N_2$	Dimethyl-aminoazobenzene.
$C_{14}H_{16}O_6$	Benzyl- <i>iso</i> -butenyltricarboxylic acid.
$C_{14}H_{26}O_4$	<i>norm.</i> -Dodecane-dicarboxylic acid.

14 III.

$C_{14}H_{10}O_3S$	Phenanthrene-3-sulphonic acid.
$C_{14}H_{11}O_2N$	Dibenzamide.
$C_{14}H_{11}O_3N$	Phthalanilic acid.
$C_{14}H_{12}O_2N_2$	β -Benzil dioxime.
$C_{14}H_{12}NI$	Methylacridinium iodide.
$C_{14}H_{13}O_2N$	Methylphenyldihydro-resorcylic acid nitrile.
$C_{14}H_{13}O_3N$	Acetyl- α -naphthylamino-acetic acid.
	" β - " " "
$C_{14}H_{13}O_4N$	α -Naphthylimino-diacetic acid.
	β - " " "
$C_{14}H_{15}O_4P$	Di(hydroxybenzyl) hypophosphoric acid.
$C_{14}H_{15}O_7N$	<i>o</i> -Nitrobenzoyl-malonic acid diethyl ester.
$C_{14}H_{17}O_3N$	Oxy- <i>iso</i> -butyryl- β -anilino- <i>iso</i> -butyric anhydride.
$C_{14}H_{21}O_2N$	Methylethyl-dimethylamino-methyl carbinol benzoate.
$C_{14}H_{21}O_4N$	Dihydro-collidinedicarboxylic acid diethyl ester.

14 IV.

$C_{14}H_{15}O_2N_2S$	<i>p</i> -Dimethyl-aminoazobenzene sulphonic acid.
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15 II.

$C_{15}H_{12}O_6$	1,3-Difurfural-cyclo-2-pentanone.
$C_{15}H_{14}O_3$	Benzylcresotinic acid.
$C_{15}H_{15}N_2$	Acridine Yellow.
$C_{15}H_{16}O_4$	Phenyldihydro-resorcylic acid ethyl ester.
$C_{15}H_{20}O_2$	β -Phenyl- γ -trimethylacetyl-butyric acid.
$C_{15}H_{22}O_6$	Dicarboxyl-glutaconic acid tetraethyl ester.
$C_{15}H_{26}O_6$	Butyric acid glyceryl ester.
$C_{15}H_{28}N_2$	Sparteine.
$C_{15}H_{28}O_4$	Di- <i>iso</i> -butyl-pimelic acid.
$C_{15}H_{32}N$	Tri- <i>iso</i> -amyl amine.

15 III.

$C_{15}H_{10}O_{10}N_2$	Bis-nitrophenoxy-malonic acid.
$C_{15}H_{12}O_4N$	Phenyllutidinedicarboxylic acid.
$C_{15}H_{12}O_5N$	Pyropapaverinic acid.
$C_{15}H_{14}O_5N_2$	Pyropapaverinic acid oxime.
$C_{15}H_{15}O_2N_3$	p-Dimethyl-aminoazobenzene-o-carboxylic acid.
$C_{15}H_{15}O_3N$	β -Oxy- <i>iso</i> -butyryl-o-toluidino- <i>iso</i> -butyric anhydride.
	β - " " -p- " " " "
$C_{15}H_{21}O_6Al$	Aluminum acetylacetone.
$C_{15}H_{21}O_6Fe$	Ferric acetylacetone.
$C_{15}H_{23}O_2N$	Emetine.

16 II.

$C_{16}H_{12}O_3$	Fluorenone-5-carboxylic acid ethyl ester.
$C_{16}H_{14}O_3$	Diphenyl-crotonic acid.
	$\beta\gamma$ -Diphenyl-vinylacetic acid.
$C_{16}H_{14}O_4$	<i>sym.</i> -Diphenyl-succinic acid.
	β -(<i>para</i>)Diphenyl-succinic acid.
$C_{16}H_{14}O_6$	Haematoxylin.
$C_{16}H_{16}N_3$	Diethyl-amino-azobenzene.
$C_{16}H_{26}O_3$	Camphorcarboxylic acid amyl ester.
$C_{16}H_{32}O_2$	Palmitic acid.
$C_{16}H_{34}O$	Cetyl alcohol.

16 III.

$C_{16}H_{12}O_2N_2$	Indigo White.
$C_{16}H_{12}O_7N$	Papaverinic acid.
$C_{16}H_{14}O_4N_2$	Diamino-stilbene dicarboxylic acid.
$C_{16}H_{14}O_7N_2$	Papaverinic acid oxime.
$C_{16}H_{17}ON_3$	p-Acetophenone-azo-dimethyl-aniline.
$C_{16}H_{17}O_3N$	Acetyl- β -naphthylamino- <i>iso</i> -butyric acid.
$C_{16}H_{19}O_4N$	Benzoylcegonine.
$C_{16}H_{21}O_3N$	Homatropine.
$C_{16}H_{22}O_{12}N_4$	Tetraaspartic acid.

16 IV.

$C_{16}H_{11}O_6N_3S$	p-Nitrobenzene-azo- α -naphthol sulphonic acid.
$C_{16}H_{12}O_4N_2S$	p-Benzene sulphonic acid azo- β -naphthol.
$C_{16}H_{13}O_9NS_3$	Phenyl- β -naphthylamine trisulphonic acid.
$C_{16}H_{14}O_4S_2Co$	Cobaltophenylthioacetic acid.
$C_{16}H_{18}N_3ClS$	Tetramethyl-thionine chloride.
$C_{16}H_{19}ON_3S$	Tetramethyl-thionine hydroxide.

17 II.

$C_{17}H_{12}O_3$	Phenylindone-acetic acid.
$C_{17}H_{14}O$	Dibenzal-acetone.
$C_{17}H_{14}O_3$	Dibenzoyl-acetone.
$C_{17}H_{14}Cl_2$	Dicinnamenyl-dichloro-methane.
$C_{17}H_{16}O_4$	Dibenzyl-malonic acid.
	Diphenyl-glutaric acid.
$C_{17}H_{17}N_3$	Anilopyrine.
$C_{17}H_{18}O_{10}$	Carminic acid.
$C_{17}H_{21}N_3$	Auramine.

17 III.

$C_{17}H_{15}O_7N$	Papaverinic acid β -mono methyl ester.
	" " γ - " " "
$C_{17}H_{17}O_4N$	Phenyllutidinedicarboxylic acid mono ethyl ester.
$C_{17}H_{19}O_3N$	Morphine.
$C_{17}H_{20}ON_2$	Tetramethyl-diamino-benzophenone.
$C_{17}H_{20}NCl$	α -Methylallylphenylbenzyl ammonium chloride.
$C_{17}H_{21}ON$	α -Methylallylphenylbenzyl ammonium hydroxide.
$C_{17}H_{21}O_4N$	l-Cocaine.
	r- "
$C_{17}H_{22}NBr$	Methylpropylphenylbenzyl ammonium bromide.
$C_{17}H_{22}O_3N$	Atropine.
	Hyoscyamine.
$C_{17}H_{27}O_2N$	Methyl- <i>iso</i> -amyl-dimethylamino-methyl carbinol benzoate.

18 II.

$C_{18}H_{10}O_3$	<i>allo</i> -Chrysoketonecarboxylic acid.
$C_{18}H_{12}O_4$	1-Phenyl-2,3-naphthalenedicarboxylic acid.
$C_{18}H_{14}O_3$	Benzalpiperonal acetone.
	Phenylindone-acetic acid methyl ester.
$C_{18}H_{14}O_8$	Dibenzoyl-tartaric acid.
$C_{18}H_{14}N_4$	<i>sym.</i> -Phenosafranine.
	<i>asym.</i> - "
$C_{18}H_{15}N$	Triphenyl amine.
$C_{18}H_{15}P$	Triphenyl phosphine.
$C_{18}H_{15}As$	Triphenyl arsine.
$C_{18}H_{15}Sb$	Triphenyl stibine.
$C_{18}H_{16}O_2$	4-Methoxy-dibenzal-acetone.
$C_{18}H_{16}O_4$	γ -Benzylidene- γ -phenylpyrotartaric acid.

$C_{18}H_{16}O_4$	α -Truxillic acid.
	γ - " "
$C_{18}H_{18}O_{10}$	Saponin.
$C_{18}H_{19}N_3$	2,5-Benzyliminopyrine.
$C_{18}H_{30}O_7$	Azelaic acid anhydride.
$C_{18}H_{32}O_{16}$	Raffinose.
$C_{18}H_{34}O_2$	Oleic acid.
$C_{18}H_{36}O_2$	Stearic acid.

18 III.

$C_{18}H_{15}N_4Cl$	<i>sym.</i> -Phenosafranine chloride.
	<i>asym.</i> - " "
$C_{18}H_{16}ON_2$	Meldola Blue.
$C_{18}H_{16}ON_4$	Phenosafranine.
$C_{18}H_{21}ON_3$	p-Acetophenone-azo-diethyl-aniline.
$C_{18}H_{21}O_3N$	Methylphenyl-dimethylamino-methyl carbinol benzoate.
$C_{18}H_{21}O_3N$	Codeine.
$C_{18}H_{23}ON_4$	p-Acetophenone-azo-diethyl-aniline oxime.
$C_{18}H_{23}O_4N_4$	Phenylglucosazone.
$C_{18}H_{23}O_4N$	Methylmorphinium hydroxide.

18 IV.

$C_{18}H_{13}N_2ClBr$	3-Chloro-N-phenylphenazonium bromide.
$C_{18}H_{23}O_3NCl$	Methylmorphinium chloride.

19 I.

$C_{19}H_{15}$	Triphenyl-methyl.
$C_{19}H_{16}$	Triphenyl-methane.

19 II.

$C_{19}H_{14}O_5$	Dipiperonal acetone.
$C_{19}H_{15}Cl$	Triphenyl-chloromethane.
$C_{19}H_{15}Br$	Triphenyl-bromomethane.
$C_{19}H_{15}I$	Triphenyl-iodomethane.
$C_{19}H_{16}O$	1,3-Dibenzal-cyclo-2-pentanone.
	Triphenyl carbinol.
$C_{19}H_{18}O_3$	2,2'-Dimethoxy-dibenzal acetone.
	3,3'- " " "
	4,4'- " " "
$C_{19}H_{19}N_3$	Tri-p-aminotriphenyl-methane.

$C_{19}H_{23}O_8$	Abietic acid.
$C_{19}H_{30}O_{10}$	Saponin.
$C_{19}H_{36}O_4$	Cetylmalonic acid.

19 III.

$C_{19}H_{18}ON_2$	Diamino-triphenyl carbinol.
$C_{19}H_{18}ClP$	Methyltriphenyl phosphonium chloride.
$C_{19}H_{18}IP$	Methyltriphenyl phosphonium iodide.
$C_{19}H_{18}ON_3$	p-Triamino-triphenyl carbinol.
$C_{19}H_{18}OP$	Methyltriphenyl phosphonium hydroxide.
$C_{19}H_{22}ON_2$	Cinchonidine.
	Cinchonine.
$C_{19}H_{24}ON_2$	Cinchonamine.

20 II.

$C_{20}H_8O_6$	Coerulein.
$C_{20}H_{10}O_6$	Coerulein.
$C_{20}H_{10}O_7$	Gallein.
$C_{20}H_{12}O_6$	Fluorescein.
$C_{20}H_{12}O_7$	Gallein.
$C_{20}H_{14}O_3$	<i>allo</i> -Chrysoketonecarboxylic acid ethyl ester.
$C_{20}H_{14}O_4$	Phenolphthalein.
$C_{20}H_{16}O_3$	Benzalpiperalon cyclopentanone.
	<i>iso</i> -Benzalpiperalon cyclopentanone.
	Rosolic acid.
$C_{20}H_{16}N_4$	N,N'-Diphenyl-endanilodihydro triazole.
$C_{20}H_{18}O_3$	Diphenyl-p-anisyl carbinol.
	4-Methoxy-dibenzal-cyclopentanone.
	<i>iso</i> - " " "
$C_{20}H_{18}N_2$	Phenyl-p-tolylbenzenylamidine.
$C_{20}H_{18}N_4$	Hydrocyan-p-rosaniline.
$C_{20}H_{20}N$	Diamyl- β -naphthyl amine.
$C_{20}H_{30}O_2$	Abietic acid.

20 III.

$C_{20}H_6O_7Cl_4$	Tetrachloro-gallein.
$C_{20}H_6O_6Br_4$	Tetrabromo-fluorescein.
$C_{20}H_8O_7Cl_2$	Dichloro-gallein.
$C_{20}H_8O_7Cl_4$	Tetrachloro-gallein.
$C_{20}H_{10}O_4Br_4$	Tetrabromo-phenolphthalein.
$C_{20}H_{10}O_7Cl_2$	Dichloro-gallein.
$C_{20}H_{14}O_3N_2$	Rhodamine.

$C_{20}H_{17}ON$	N-Methyl-phenyldihydro-acridol. Methyl-phenyl-acridinium hydroxide.
$C_{20}H_{17}ON_3$	p-Acetophenone-azo-phenylaniline.
$C_{20}H_{18}ON_2$	1,2-Diphenyl-3-benzyl-hydroxy-amidine. 1,2- " -3-p-tolyl- " "
$C_{20}H_{20}ON_2$	Methylquinolinium oxide.
$C_{20}H_{20}ClP$	Ethyltriphenyl phosphonium chloride.
$C_{20}H_{21}ON_3$	Rosaniline.
$C_{20}H_{21}OP$	Ethyltriphenyl phosphonium hydroxide.
$C_{20}H_{21}O_4N$	Papaverine.
$C_{20}H_{22}O_{10}Cl_2$	3,6-Dichloro-quinonedimalonic acid tetra ethyl ester.
$C_{20}H_{24}O_3N_2$	Quinidine. Quinine.
$C_{20}H_{27}O_{11}N$	Amygdalin.

20 IV.

$C_{20}H_{14}O_4N_2S$	1,4-Naphthalene sulphonic acid azo- β -naphthol.
$C_{20}H_{14}O_7N_2S_2$	See Crystal Ponceau.

20 V.

$C_{20}H_{12}O_7N_2S_2Na_2$	Crystal Ponceau.
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21 II.

$C_{21}H_{16}O_5$	Dipiperonal-cyclopentanone.
$C_{21}H_{18}O$	Dicinnamenyl-vinyl-ketone.
$C_{21}H_{20}O_3$	1,3-Dimethoxy-dibenzal-cyclo-2-pentanone. Phenyl-di-p-anisyl carbinol.
$C_{21}H_{21}N$	Tribenzyl amine.
$C_{21}H_{22}O_3$	2,2'-Bis-ethylsalicylal-acetone.
$C_{21}H_{22}O_5$	Bis-methylvanillal acetone.
$C_{21}H_{24}O_4$	2,6-Dibenzyl-pimelic acid.
$C_{21}H_{24}O_{10}$	Phloridzin.

21 III.

$C_{21}H_{15}O_4N_3$	Pyropapaverinic acid phenylhydrazone.
$C_{21}H_{15}N_4I$	Methylnitronium iodide.
$C_{21}H_{21}O_6N$	Hydrastine.
$C_{21}H_{22}O_2N_2$	Strychnine.
$C_{21}H_{22}ClP$	Propyltriphenyl phosphonium chloride.
$C_{21}H_{22}OP$	Propyltriphenyl phosphonium hydroxide.
$C_{21}H_{24}O_9N_6$	Pepsinfibrinpeptone α .

22 II.

$C_{22}H_{15}N_3$	Rosinduline.
$C_{22}H_{21}Cl$	Tri-p-tolyl chloromethane.
$C_{22}H_{21}Br$	Tri-p-tolyl bromomethane.
$C_{22}H_{22}O$	Tri-p-tolyl carbinol.
$C_{22}H_{22}O_4$	Tri-o-anisyl carbinol.
	" -m- " "
	" -p- " "
	o,o,p-Trianisyl carbinol.
$C_{22}H_{22}O_{13}$	Carminic acid.

22 III.

$C_{22}H_{14}ON_2$	Rosindone.
$C_{22}H_{19}O_6N_3$	Papaverinic acid phenylhydrazone.
$C_{22}H_{23}O_7N$	Narcotine.
$C_{22}H_{25}O_4N_2$	Gelsemine.

22 IV.

$C_{22}H_{15}ON_3Cl$	6-Chloro-o-N-phenylnaphthophenazonium hydroxide.
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23 II.

$C_{22}H_{20}O$	Dicinnamenyl-cyclopentanone.
$C_{22}H_{20}O_6$	3,6-Dimethoxy-phenylxanthonium-carboxylic acid methyl ester.
$C_{22}H_{24}O_3$	2,2'-Bis-ethylsalicylal cyclopentanone.
$C_{22}H_{24}O_5$	Bis-methylvanillal cyclopentanone.
$C_{22}H_{26}O$	Dicuminal-acetone.

23 III.

$C_{22}H_{19}O_5Cl$	3,6-Dimethoxy-phenylxanthonium-carboxylic acid methyl ester chloride.
$C_{22}H_{26}O_4N_2$	Brucine.
$C_{22}H_{26}ClP$	iso-Amyltriphenyl phosphonium chloride.
$C_{22}H_{27}OP$	iso-Amyltriphenyl phosphonium hydroxide.
$C_{22}H_{31}O_{16}N_7$	Pepsinglutinpeptone α .

23 IV.

$C_{22}H_{27}O_2N_2Cl$	Ethylstrychninium chloride.
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23 V.

$C_{22}H_{20}O_2N_2ClBr$ Bromoethyl strychninium chloride.

24 II.

$C_{24}H_{20}Si$ Silicon tetraphenyl.

24 III.

$C_{24}H_{20}NBr$ Triphenyl-methyl pyridinium bromide.
 $C_{24}H_{21}ON$ Triphenyl-methyl pyridinium hydroxide.
 $C_{24}H_{23}O_4N_2$ Gelsemine.

25 II.

$C_{25}H_{28}O$ Dicuminal-cyclopentanone.

25 III.

$C_{25}H_{25}ClP$ Triphenyl-benzyl phosphonium chloride.
 $C_{25}H_{25}OP$ Triphenyl-benzyl phosphonium hydroxide.
 $C_{25}H_{21}ON_3$ Hexamethyl-p-triamino-triphenyl carbinol.

25 IV.

$C_{25}H_{31}O_4N_2Cl$ Ethylbrucinium chloride.

25 V.

$C_{25}H_{30}O_4N_2ClBr$ Bromoethyl brucinium chloride.

26 III.

$C_{26}H_{18}ON_2$ Phenylphenanthrophenazonium hydroxide.
 $C_{26}H_{33}ON_3$ Triethyl-rosaniline.
 $C_{26}H_{43}O_5N$ Glycocholic acid.

26 IV.

$C_{26}H_{21}O_7N_3S_3$ Erika B.

26 V.

$C_{26}H_{19}O_7N_3S_3K_3$ Erika B.

27 III.

$C_{27}H_{24}ON_2$ Brilliant Green.

28 II.

$C_{23}H_{19}N_3$ Phenylrosinduline.

28 III.

$C_{28}H_{38}ClP$ Tetrabenzyl phosphonium chloride.
 $C_{28}H_{39}OP$ Tetrabenzyl phosphonium hydroxide.

28 IV.

$C_{28}H_{34}O_2N_4S_2$ See Chrysophenine.
 $C_{28}H_{37}O_4N_2Cl$ *iso*-Amylbrucinium chloride.

28 V.

$C_{28}H_{32}O_8N_4S_2K_2$ Chrysophenine.

29 II.

$C_{29}H_{37}N_3$ See at the end of the tables.

29 III.

$C_{29}H_{35}N_2I$ Cyanine.

30 II.

$C_{30}H_{30}N_4$ Naphthalene Red.

30 III.

$C_{30}H_{38}N_2I$ Cyanine.
 $C_{30}H_{40}O_5N_2$ Emetine.
 $C_{30}H_{44}O_4N_2$ Emetine.
 $C_{30}H_{37}O_3N_{17}$ Clupeine.
 $C_{30}H_{60}O_6N_{16}$ Scombrine.

32 II.

$C_{22}H_{48}O_{16}$ Methacrylic acid. (Polymeric).
 $C_{22}H_{32}O_{17}$ Saponin.

32 III.

$C_{22}H_{42}O_{21}N_8$ Octoaspartic acid.
 $C_{22}H_{49}O_9N$ Veratrine.

32 IV.

$C_{22}H_{24}O_8N_6S_2$ See Congo Red.

33 III.

$C_{23}H_{33}O_9Fe$ Ferribenzoylacetic acid ethyl ester.
 $C_{23}H_{45}O_{12}N$ Aconitine.

34 III.

$C_{24}H_{47}O_{11}N$ Aconitine.

34 IV.

$C_{24}H_{28}O_8N_6S_2$ See Benzopurpurine.

34 V.

$C_{24}H_{26}O_6N_6S_2K_2$ Benzopurpurine 4 B.
 $C_{24}H_{26}O_6N_6S_2Na_2$ " "

35 IV.

$C_{35}H_{56}O_{19}N_8S$ Uroferrinic acid.

37 IV.

$C_{37}H_{31}O_{10}N_3S_3$ Helvetia Blue trisulphonic acid.
 Spirit Blue " "

38 I.

$C_{38}H_{30}$ Hexaphenyl-ethane.

38 II.

$C_{38}H_{30}O_2$ Triphenyl-methyl peroxide.
 $C_{38}H_{41}N_3$ See Night Blue.

38 III.

$C_{38}H_{34}Cl_2P_2$ Ethylenehexaphenyl phosphonium chloride.
 $C_{38}H_{42}N_3Cl$ Night Blue.

41 II.

$C_{41}H_{35}O_{28}$ Tannic acid.

42 II.

$C_{62}H_{38}O_2$ Triphenyl-methyl acetic acid ethyl ester.

42 IV.

$C_{62}H_{34}O_9NP$ Lecithin.

43 IV.

$C_{63}H_{30}O_9NP$ Lecithin.

44 IV.

$C_{64}H_{30}O_{11}NP$ Lecithin.

57 II.

$C_{57}H_{110}O_6$ Stearic acid glyceryl ester.

AUTHOR LIST.

The names are arranged alphabetically. Prefixes not beginning with a capital letter, as *de*, *van* and *von*, are not considered in the arrangement.

Each article is preceded by a number in boldface type, used as a key number in all references to that article.

Notes in brackets after the title, refer only to numerical data and not to the text. Thus, [Quoted], shows that such data have been quoted from some other article; [Same as], shows that such data are the same in another article, the number of which is given. Occasionally a brief explanation is given, as Qualitative, Indicators etc.

The name of a person who made measurements described in the article, follows the date of the journal. When only part of the measurements were made by such a person, the name is preceded by the sign #, thus, # *Meas. Smith*.

When an author has published articles in different journals, the journals are arranged in alphabetical order in two divisions, giving first the more accessible. Under each journal the articles are arranged chronologically.

Articles enclosed in parenthesis contain no original measurements of the ionisation constant or of the electrical conductivity of organic compounds.

AUTHOR LIST.

A.

1. G. Abati. *Gas. Chim. Ital.* 36, II, 834-837, (1906).
Sopra gli acidi idroftalici. La costante d'affinità delle due nuove anidridi.
[Same as 4.]
T=25°. R. O. κ aq. = $1-2 \times 10^{-6}$; $\frac{1}{2} \kappa$ aq. is sub.
2. (G. Abati. *Gas. Chim. Ital.* 36, II, 848-855, (1906).
Influenza della posizione del legame etilenico sulla sua elettroaffinità e sui caratteri di acidi non saturi aliciclici.) [Same as 5. Quoted.]
3. G. Abati. *Gas. Chim. Ital.* 38, I, 152-161, (1908).
Sopra gli acidi idroftalici. L'acido $\Delta_{2,5}$ diidroftalico. Discussione sulla costituzione sua e su quella dell'acido $\Delta_{1,3}$. [Same as 6.]
T=25.0°. R. O. κ aq. = 1.02×10^{-6} ; $\frac{1}{2} \kappa$ aq. is sub.
4. G. Abati. *Rend. Accad. Sciens. (Napoli)*. (3^a), 12, 207-210, (1906).
Sopra gli acidi idroftalici, etc. [Same as 1.]
5. (G. Abati. *Rend. Accad. Sciens. (Napoli)*. (3^a), 12, 220-226, (1906).
Influenza della posizione, etc.) [Same as 2.]
6. G. Abati. *Rend. Accad. Sciens. (Napoli)*. (3^a), 12, 466-473, (1906).
Sopra gli acidi idroftalici, etc. [Same as 3.]
7. G. Abati. [M. Solimene.] *Gas. Chim. Ital.* 38, II, 577-587, (1908).
Sopra gli acidi idroftalici. La velocità di addizione del bromo alle anidridi tetraidroftaliche. [Same as 8. Quote measurements of A. Dorn.]
8. G. Abati. [M. Solimene.] *Rend. Accad. Sciens. (Napoli)*. (3^a), 14, 181-191, (1908).
Sopra gli acidi idroftalici, etc. [Same as 7.]
- G. Abati. [M. Solimene.] *Rend. Accad. Sciens. (Napoli)*. (3^a), 14, 181-191, see G. Abati.
- C. G. Abbot see A. A. Noyes.
9. (R. Abegg. *Zeit. Elektrochem.* 10, 185-189, (1904).
Anwendung der physikalischen Chemie auf die organische Chemie.) [Quoted.]
R. Abegg see S. Labendzinski.
" " see H. Schäfer.
10. R. Abegg, J. F. Spencer. *Zeit. Anorg. Chem.* 46, 406-414, (1905).
Zur Kenntnis der Thalliumoxalate.
 κ aq. = 2×10^{-6} .
11. J. H. Aberson. *Ber. Deutsch. Chem. Ges.* 31, 1432-1449, (1898).
Meas. E. Cohen.
- Die Äpfelsäure der Crassulaceen. [Same as 13.]
 κ aq. sub.
12. J. H. Aberson. *Verslag. Akad. Amsterdam.* 6, 535-537, (1897-1898).
De Isomerie van het Appelzuur. [An abstract of 13. Qualitative.]

13. J. H. Aberson. *Verhand. Akad. Amsterdam*. (1. Sectie). Vol. 6, no. 4, 1-42, (1897-1899).
De Isomerie van't Appelsuur. [Same as 11.]
14. (G. Accolla. *Atti Accad. Gioenia*. (4), 18, Mem. VI, 1-15, (1905).
Su un metodo per la misura delle piccole variazioni di resistenza negli elettroliti e sua applicazione.) [Inorganic.]
15. S. F. Acree. *Am. Chem. Jour.* 38, 1-91, (1907). *Meas. G. H. Shadinger*.
On the constitution of phenylurazole. III; A contribution to the study of tautomerism. [Measurements given in 18.]
 $T = 25^{\circ}$.
16. S. F. Acree, J. M. Johnson. *Am. Chem. Jour.* 38, 258-355, (1907).
Studies in catalysis. [Qualitative.]
17. S. F. Acree, S. Nirdlinger. *Am. Chem. Jour.* 38, 489-507, (1907).
On the hydrolysis of amides by acids.
 $T = 18^{\circ}$.
18. S. F. Acree, G. H. Shadinger. *Am. Chem. Jour.* 39, 124-145, (1908).
[*Meas. Shadinger?*]
On the affinity constants and constitution of several urazoles. [See 15.]
 $T = 25^{\circ}$. $\kappa_{25} \text{ aq.} = 1.8 - 2.3 \times 10^{-4}$.
L. D'Agostini see G. Carrara.
- Meas.* A. Aita; see 294, 295.
A. Aita see G. Bruni.
- Meas.* C. R. Allen; see 902.
C. R. Allen see H. C. Jones.
19. E. T. Allen. *Jour. Am. Chem. Soc.* 25, 421-444, (1903).
Precipitation and separation by weak organic bases. [Hydrolysis of salts.]
 $T = 40^{\circ}$.
[The Andrews in the following three references is the same man.]
20. L. Andrews. *Proc. Iowa Acad.* I, Pt. IV, 12-15, (1887-1893).
Some peculiarities of solutions of ferric sulphocyanate.
21. L. W. Andrews, C. Ende. *Zeit. Phys. Chem.* 17, 136-144, (1895).
Eine Studie der physikalischen Eigenschaften von Chlorlithiumlösungen in Amylalkohol. [Same as 22.]
 $T = 25^{\circ}$.
22. L. W. Andrews, C. Ende. *Proc. Iowa Acad.* 2, 95-103, (1894).
A study of the physical properties of solutions of lithium chloride in amyl alcohol. [Same as 21.]
23. A. Angeli. *Gaz. Chim. Ital.* 22, II, 1-31, (1892).
Sulle costanti di affinità di alcuni acidi della serie del pirrolo e dell'indolo. [Same as 24. Gives all the acids in 25 and also some ketonic acids.]
 $T = 25^{\circ}$. $\lambda \text{ aq.} = 0.002-0.003$; not sub.
24. A. Angeli. *Mem. Accad. Bologna*. (5), 2, 455-484, (1891).
Sulle costanti di affinità, etc. [Same as 23.]
25. A. Angeli. *Rend. Accad. Lincei*. (5), 1, I, 160-169, (1892).
Sulla conducibilità elettrica di alcuni acidi pirrolocarbonici ed indolcarbonici. [Given in 23 and 24.]
26. A. Angeli, E. Rimini. *Gaz. Chim. Ital.* 26, II, 34-45, (1896).
Sull'azione dell'acido nitroso sopra la canforossima.

27. U. Antony, G. Magri. *Gas. Chim. Ital.* 35, I, 206-226, (1905).
L'idrogeno solforato liquido come solvente. [Qualitative.]
T = -52°.
M. P. Applebey see H. Hartley, N. G. Thomas.
28. R. Apt. *Schrift. Naturw. Ver. Schleswig-Holstein.* 11, 242-245, (1896-1898).
Ueber die elektrischen und magnetischen Eigenschaften des Nickeltetra-carbonyls.
Hg. U.
29. E. H. Archibald. *Jour. Am. Chem. Soc.* 29, 665-683, (1907).
The electrical conductivity of solutions of the alcohols in liquid hydrogen bromide.
T = -80°. R. O. α of solvent is sub. in a few cases.
30. E. H. Archibald. *Jour. Am. Chem. Soc.* 29, 1416-1439, (1907).
The electrical conductivity of solutions of the organic acids in liquid hydrogen chloride and bromide.
T = -80° and about -96°. R. O. α solvent sub. in some cases.
31. (E. H. Archibald. *Proc. Trans. Nova Scot.* 10, 33-48, (1898-1902).
On a test, by the freezing-point method, of the ionization coefficients determined by the conductivity method for solutions containing potassium and sodium sulphates.) [Inorganic.]
E. H. Archibald see B. D. Steele, D. McIntosh.
" " " see J. W. Walker, D. McIntosh.
32. E. H. Archibald, D. McIntosh. *Proc. Trans. R. Soc. Canada.* (2), 10, Sect. III, 43-46, (1904).
The variation of the valency of elements with temperature.
T = -50° to -150°.
33. E. H. Archibald, D. McIntosh. *Proc. R. Soc. London.* 73, 454-455, (1904).
On the liquefied hydrides of phosphorus, sulphur, and the halogens, as conducting solvents.
R. O.
34. E. H. Archibald, W. A. Patrick. *Chem. News.* 100, 150, (1909).
The electrical conductivity of solutions of iodine and of platinum tetraiodide in ethyl alcohol.
35. (H. E. Armstrong. *Proc. R. Soc. London.* 40, 268-291, (1886).
Electrolytic conduction in relation to molecular composition, valency and the nature of chemical change; being an attempt to apply a theory of "residual affinity.") [Theoretical, quoted and inorganic.]
36. (H. E. Armstrong, and others. *Proc. R. Soc. London. A*, 81, 80-140, (1908-1909).
Studies of the processes operative in solutions.)
37. (H. E. Armstrong. *Proc. R. Soc. London. A*, 81, 80-95, (1908-1909).
Hydrolysis, hydrolation and hydronation as determinants of the properties of aqueous solutions.) [Inorganic.]
38. (H. E. Armstrong, D. Crothers. *Proc. R. Soc. London. A*, 81, 102-112, (1908-1909).
The influence of salts on hydrolysis and the determination of hydration values.) [Inorganic.]
39. (H. E. Armstrong, E. Wheeler. *Proc. R. Soc. London. A*, 81, 95-102, (1908-1909).
The relative efficiencies of acids as deduced from their conductivities and hydrolytic activities.) [Inorganic.]

40. (K. Arndt. Ber. Deutsch. Chem. Ges. 40, 2937-2940, (1907).
Die elektrolytische Dissoziation geschmolzener Salze.) [Inorganic.]
41. (K. Arndt. Ber. Deutsch. Chem. Ges. 40, 3612-3614, (1907).
Die elektrolytische Dissoziation geschmolzener Salze.) [Inorganic.]
42. (K. Arndt. Zeit. Elektrochem. 13, 809-812, (1907).
Zähigkeit und Leitfähigkeit.) [Inorganic.]
43. S. Arrhenius. Zeit. Phys. Chem. 4, 96-116, (1889).
Ueber die Dissociationswärme und den Einfluss der Temperatur auf den
Dissociationsgrad der Elektrolyte.
T = 18° and 52°.
44. S. Arrhenius. Zeit. Phys. Chem. 5, 1-22, (1890). *Meas. J. Walker.*
Ueber die Gleichgewichtsverhältnisse zwischen Elektrolyten. [Same as 49.]
T = 25° and 54°. S. U.
45. S. Arrhenius. Zeit. Phys. Chem. 9, 487-511, (1892).
Ueber die Aenderung des elektrischen Leistungsvermögens einer Lösung durch
Zusatz von kleinen Mengen eines Nichtleiters. [Same as 50.]
T = 25° for part of the measurements.
46. S. Arrhenius. Zeit. Phys. Chem. 11, 805-823, (1893).
Die Elektrolyse von Alkalisalzen.
47. (S. Arrhenius. Zeit. Phys. Chem. 31, 197-229, (1899).
Ueber die Aenderung der Stärke schwacher Säuren durch Salzzusatz.) [In-
organic.]
48. S. Arrhenius. Med. Nobelinst. 1, no. 9, 1-17, (1906-1909).
Ueber die Schütz'sche Regel bei Reaktionsgeschwindigkeiten. [No data.]
T = 14.8°.
49. S. Arrhenius. Öfver. K. Vet.-Akad. Förhand. (Stockholm). (1889),
619-645.
Ueber die Gleichgewichtsverhältnisse, etc. [Same as 44.]
50. S. Arrhenius. Bihang. Svensk. Vet.-Akad. Hand. Stockholm. 18, Afd.
1, no. 5, 1-31, (1892-1893).
Ueber die Aenderung des elektrischen, etc. [Same as 45.]
51. (S. Arrhenius, T. Madsen. Ov. Danske Vids. Selsk. Forhand. (1904),
269-305.
Toxines et antitoxines. Le poison diphtérique.)
52. O. Aschan. Ann. Chemie. 271, 231-284, (1892). *Meas. U. Collan.*
Ueber Hydrobenzoesäuren.
- 52a. L. Asher, T. Karaulow. Biochem. Zeit. 25, 305-327, (1910).
Beiträge zur Physiologie der Drüsen. XV. Mitteilung. Untersuchungen über
die Beziehungen zwischen physikalisch-chemischen Eigenschaften von Drüs-
enproteiden und dem Scheidevermögen der Drüsen.
T = 30°.
53. P. Askenasy, V. Meyer. Ber. Deutsch. Chem. Ges. 26, 1354-1370,
(1893). *Meas. W. Ostwald.*
Ueber die Jodosverbindungen.
54. M. Asriel. Dis. Heidelberg. (1900).
Physikalisch-chemische Studien über aromatische Sulfinsäuren.
T = 18°, 25° and 30°. *x aq. sub.*
E. Aston see P. Dutoit.
" " see J. Walker.
55. (A. H. W. Aten. Zeit. Phys. Chem. 66, 641-671, (1909).
Elektrizitätsleitung in Mischungen von Metallen und ihren Salzen.)

56. (E. v. Aubel. *Phys. Zeit.* 4, 551-552, (1902-1903).
Bemerkungen zu den Franz Streintzschen Untersuchungen über elektrische Leitfähigkeit komprimierter Pulver.) [Inorganic.]
57. A. Auerbach, H. Friedenthal. *Arch. Anat. Physiol. — Physiol. Abtheil.* (1903), 397-411.
Ueber die Reaction des menschlichen Harnes unter verschiedenen Ernährungsbedingungen und ihre quantitative Bestimmung. [Physiological. Indicators.]
58. F. Auerbach. *Ber. Deutsch. Chem. Ges.* 38, 2833-2836, (1905).
Zur Kenntniss des Formaldehyds und der Formiatbildung. [Criticizes 528. See also 529.]
59. S. M. Auld, A. Hantzsch. *Ber. Deutsch. Chem. Ges.* 38, 2677-2685, (1905).
Ueber Verbindungen von Ketonen und Aldehyden mit Quecksilberoxyd.
T = 18°.
60. K. Auwers. *Ann. Chemie.* 285, 241-282, (1895). *Meas.* [T.] Paul.
Ueber die Isomerieverhältnisse der Trimethylbernsteinsäure und der symmetrischen α, α -Dimethylglutarsäure.
61. K. Auwers. *Ann. Chemie.* 292, 132-243, (1896). *Meas.* Pfaff.
Studien in der Gruppe der Bernsteinsäuren und Glutarsäuren.
62. K. Auwers. *Ann. Chemie.* 298, 147-181, (1897). *Meas.* P. Walden.
Untersuchungen über substituierte Bernsteinsäuren.
63. K. Auwers. *Ber. Deutsch. Chem. Ges.* 28, 263-270, (1895). *Meas.* [T.] Paul.
Ueber Trimethylbernsteinsäure und symmetrische α, α -Dimethylglutarsäuren.
64. K. Auwers, G. v. Campenhausen. *Ber. Deutsch. Chem. Ges.* 29, 1543-1549, (1896). *Meas.* Pfaff.
Ueber Oxytrimethylbernsteinsäure. [Same as 326.]
65. K. Auwers, L. L. Jackson. *Ber. Deutsch. Chem. Ges.* 23, 1599-1617, (1890). *Meas.* R. Bader.
Ueber Structurbestimmung aliphatischer Säuren und die sogenannte "dynamische Isomerie."
66. K. Auwers, A. Jacob. *Ber. Deutsch. Chem. Ges.* 27, 1114-1132, (1894). *Meas.* H. Wislicenus.
Ueber stereoisomere Butantetracarbonsäuren. [The acids only are given in 868 with tables of μ . Sodium salts also are given here.]
67. K. Auwers, E. Köbner, F. v. Meyenburg. *Ber. Deutsch. Chem. Ges.* 24, 2887-2901, (1891). *Meas.* P. Walden.
Synthesen mehrbasischer Fettsäuren.
68. K. Auwers, A. Oswald. *Ann. Chemie.* 285, 283-309, (1895). *Meas.* [T.] Paul.
Ueber Trimethylbernsteinsäuren verschiedener Herkunft. I. Trimethylbernsteinsäure aus α -Cyanpropionsäureester und α -Bromisobuttersäureester.
T = 25°.
69. K. Auwers, J. F. Thorpe. *Ann. Chemie.* 285, 310-339, (1895). *Meas.* [T.] Paul.
Ueber symmetrische α, α -Dimethylglutarsäuren.
T = 25°.

B.

- 70. R. Bader.** Zeit. Phys. Chem. 6, 289-318, (1890).
 Ueber die Affinitätsgrößen organischer Säuren und ihre Beziehung zur Zusammensetzung und Konstitution derselben.
 $T = 25^{\circ}$.
Meas. R. Bader; see 65, 71, 1373.
- 71. A. Baeyer.** Ann. Chemie. 266, 169-202, (1891). *Meas. R. Bader and H. G. Behmann.*
 Ueber die Hydronaphtoëssäuren. [Probably the same measurements as in 70 and 175. Only k is given here, not Λ .]
- 72. A. Baeyer.** Ann. Chemie. 269, 145-206, (1892). *Meas. W. Ostwald.*
 Ueber die Reduktionsproducte der Phtalsäure.
- 73. A. Baeyer.** Ber. Deutsch. Chem. Ges. 42, 2624-2633, (1909).
 Dibenzalacetone und Triphenylmethan.
- 74. A. Baeyer, V. Villiger.** Ber. Deutsch. Chem. Ges. 35, 3013-3033, (1902).
 Dibenzalacetone und Triphenylmethan.
- 75. F. Baker.** Jour. Chem. Soc. 91, 1490-1500, (1907).
 The structure of carbonium salts.
- 76. L. Balbiano.** Gaz. Chim. Ital. 29, II, 490-592, (1899). *Meas. Montemartini.*
 Ricerche analitiche sull'acido canforico.
- 77. E. Bamberger.** Ber. Deutsch. Chem. Ges. 27, 359-379, (1894). *Meas. Häuppli.*
 Ueber die Diazobenzolsäure.
- 78. E. Bamberger.** Ber. Deutsch. Chem. Ges. 31, 2626-2635, (1898).
Meas. O. Schmidt, O. Weber.
 Zur Kenntniss der sogenannten "Nitroazoparaffine." [See 82 for measurements.]
- 79. E. Bamberger.** Ber. Deutsch. Chem. Ges. 35, 3697-3710, (1902).
Meas. A. Holleman.
 Ueber die Einwirkung von Salzsäure auf m-Tolylhydroxylamin.
- 80. E. Bamberger, B. Berlé.** Ann. Chemie. 273, 303-342, (1893). *Meas. Zengelis.*
 Die α -ständige Methylgruppe der Benzimidazole und das Verhalten der letzteren bei der Oxydation.
- 81. E. Bamberger, W. Lodter.** Ann. Chemie. 288, 74-133, (1895). *Meas. [G.] Bredig.*
 Studien über alicyclische Naphtalinderivate.
- 82. E. Bamberger, O. Schmidt.** Ber. Deutsch. Chem. Ges. 34, 574-594, (1901). *Meas. O. Schmidt.*
 Ueber das Phenylhydrazon des Nitroformaldehyds. [Same as 1593.]
 $T = 0^{\circ}$ and 25° .
- 83. (E. Bamberger, O. Schmidt.** Ber. Deutsch. Chem. Ges. 34, 2001-2017, (1901).
 Ueber isomere Hydrazone.) [Quoted from 82.]
L. des Bancels see V. Henri.
- 84. (W. D. Bancroft.** Zeit. Phys. Chem. 31, 188-196, (1899).
 The dilution law.)
- 85. P. Barbier, P. Sisley.** Ann. Chim. Phys. (8), 13, 96-142, (1908).
 Recherches sur les safranines. [Same as 86.]
 $T = 24.9^{\circ}$.

- 86. P. Barbier, P. Sisley.** *Bul. Soc. Chim.* (3), 33, 1190-1198, (1905).
 Sur les phénosafranines symétrique et dissymétrique. [Same as 85.]
 $T = 24.9^\circ$.
- 87. (P. Barbier, P. Sisley.** *Bul. Soc. Chim.* (3), 35, 1282-1285, (1906).
 Nouveau mode de formation des safranines dissymétriques.)
- 88. J. T. Barker.** *Chem. News.* 97, 37-40, (1908).
 A physico-chemical study of the complex copper-glycocol sulphates.
 $T = 13^\circ$ and 17° .
- 89. J. T. Barker.** *Chem. News.* 97, 51-54, (1908).
 A physico-chemical study of the complex copper-glycocol sulphates.
 $T = 25^\circ$. $R. O. \kappa_{aq.} = 2 \times 10^{-6}$; sub.
- 90. (P. S. Barlow.** *Phil. Mag.* (6), 11, 595-604, (1906).
 The osmotic pressures of alcoholic solutions.) [Inorganic.]
- 91. (F. Barmwater.** *Zeit. Phys. Chem.* 28, 115-144, (1899).
 Ueber das Wesen des osmotischen Drucks.) [Quoted.]
- 92. (F. Barmwater.** *Zeit. Phys. Chem.* 28, 424-430, (1899).
 Ueber das Leitvermögen der Gemische von Elektrolyten.) [Theoretical and inorganic.]
- 93. F. Barmwater.** *Zeit. Phys. Chem.* 45, 557-565, (1903).
 Ueber das Leitvermögen der Gemische von Elektrolyten.
 $T = 18^\circ$. $R. O. \kappa_{18 aq.} = 1.5-2 \times 10^{-6}$; sub.
- 94. F. Barmwater.** *Zeit. Phys. Chem.* 56, 225-235, (1906).
 Ueber das Leitvermögen der Gemische von Elektrolyten.
 $\kappa_{aq.} = 1.5-2 \times 10^{-6}$; sub. [T probably 18° ; see 93.]
- 95. (H. T. Barnes.** *Proc. Trans. R. Soc. Canada.* (2), 6, Sect. III, 75-76, (1900).
 Note on the effect of a change in dissociation on the density-curve of a hydrated electrolyte in aqueous solutions of different concentration.) [Inorganic.]
- 96. (J. Barnes.** *Proc. Trans. R. Soc. Canada.* (2), 6, Sect. III, 37-54, (1900).
 On the depression of the freezing-point in solutions containing hydrochloric and sulphuric acids.) [Theoretical and inorganic.]
- 97. (J. Barnes.** *Proc. Trans. Nova Scot.* 10, 129-138, (1898-1902).
 On the calculation of the conductivity of aqueous solutions containing hydrochloric and sulphuric acids.) [Inorganic.]
- 98. (J. Barnes.** *Proc. Trans. Nova Scot.* 10, 139-161, (1898-1902).
 On the depression of the freezing-point by mixtures of electrolytes.) [Inorganic.]
- 98a. J. O. W. Barratt.** *Zeit. Elektrochem.* 16, 130-132, (1910).
 Ueber die Konstanten der ersten und zweiten Dissoziation des Chinins.
 $T = 16^\circ$ to 18° . $\kappa_{aq.} = 9 \times 10^{-6}$.
Meas. Barth; see 558.
- A. Barth see A. Hantzsch.**
- Meas. C. Barth; see 729.*
- 99. (A. Bartoli.** *Gaz. Chim. Ital.* 13, 27-34, (1883).
 Sulla costituzione degli elettroliti.) [Theoretical and general.]
- 100. A. Bartoli.** *Gaz. Chim. Ital.* 14, 516-522, (1884).
 La conducibilità elettrica delle combinazioni del carbonio. [Same as 115 and 126.]
- 101. A. Bartoli.** *Gaz. Chim. Ital.* 14, 522-526, (1884).
 Di un singolare fenomeno elettrico osservato nell'alcool cetilico solido. [Same as 116. See 110.]

- 102. A. Bartoli.** *Gaz. Chim. Ital.* 15, 392-397, (1885).
La conducibilità elettrica delle combinazioni del carbonio ed in ispecie sulla conducibilità delle ammidi, dei nitroderivati ecc. [Same as 117 and 127].
- 103. A. Bartoli.** *Gaz. Chim. Ital.* 15, 397-399, (1885).
Sulla dipendenza della conducibilità elettrica della dietilammina dalla temperatura. [Same as 119 and 130. Qualitative.]
 $T = -10^{\circ}$ to $+80^{\circ}$.
- 104. A. Bartoli.** *Gaz. Chim. Ital.* 15, 400-403, (1885).
La conducibilità elettrica di alcuni composti organici allo stato solido. [Same as 118 and 129.]
- 105. A. Bartoli.** *Gaz. Chim. Ital.* 15, 410-416, (1885).
La conducibilità elettrica delle mescolanze di combinazioni organiche. [Same as 120 and 128.]
 $T = -40^{\circ}$ to 120° .
- 106. A. Bartoli.** *Gaz. Chim. Ital.* 24, II, 156-172, (1894).
Sulla dipendenza della conducibilità elettrica degli eteri composti dalla temperatura critica. [Same as 112 and 125.]
 $T = 13^{\circ}$ to 210° .
- 107. A. Bartoli.** *Gaz. Chim. Ital.* 25, I, 205-207, (1895).
Sulla conduttività elettrica di alcuni composti in prossimità della temperatura critica. [Same as 113. Qualitative.]
- 108. A. Bartoli.** *Atti Accad. Gioenia.* (4), 2, 45-80, (1889-1890).
Sulla conducibilità elettrica di alcuni miscugli naturali di composti organici ed in particolare sulla conducibilità elettrica degli olii, dei grassi, delle cere, delle essenze, dei balsami e delle resine. [Same as 124.]
 $T = 0^{\circ}$ to 300° .
- 109. A. Bartoli.** *Bol. Accad. Gioenia.* (N. S.), Fasc. 4, 4-8, (1889).
Sulla conducibilità elettrica, etc. [An abstract of 108. Qualitative.]
- 110. A. Bartoli.** *Bol. Accad. Gioenia.* (N. S.), Fasc. 23-24, 12-13, (1892).
Abstracted in *Beibl. Ann. Phys.* 17, 1085, (1893).
Spiegazione delle anomalie che presenta la conducibilità elettrica dell'etaleo.
 $T = 0^{\circ}$ to 104° .
- 111. A. Bartoli.** *Bol. Accad. Gioenia.* (N. S.), Fasc. 26-28, 4-5, (1892).
La conducibilità elettrica di alcuni liquidi molto viscosi, dopo raffreddamenti rapidi, e dopo lenti raffreddamenti. [Qualitative.]
- 112. A. Bartoli.** *Rend. R. Ist. Lombardo.* (2), 27, 490-503, (1894).
Sulla dipendenza della conducibilità, etc. [Same as 106 and 125.]
- 113. A. Bartoli.** *Rend. R. Ist. Lombardo.* (2), 28, 246-248, (1895).
Sulla conduttività elettrica, etc. [Same as 107.]
- 114. A. Bartoli.** *Nuovo Cim.* (3), 15, 203-210, (1884).
Relazione fra la conducibilità elettrica e la composizione dei carboni di varie specie.
- 115. A. Bartoli.** *Nuovo Cim.* (3), 16, 64-69, (1884).
La conducibilità elettrica, etc. [Same as 100 and 126.]
- 116. A. Bartoli.** *Nuovo Cim.* (3), 16, 70-74, (1884).
Sopra un singolare fenomeno osservato nel misurare la conducibilità elettrica dell'etaleo. [Same as 101. See 110.]
- 117. A. Bartoli.** *Nuovo Cim.* (3), 19, 43-48, (1886).
La conducibilità elettrica delle combinazioni, etc. [Same as 102 and 127.]
- 118. A. Bartoli.** *Nuovo Cim.* (3), 19, 48-52, (1886).
La conducibilità di alcuni, etc. [Same as 104 and 129.]
- 119. A. Bartoli.** *Nuovo Cim.* (3), 19, 52-54, (1886).
Sulla dipendenza della conducibilità, etc. [Same as 103 and 130.]

- 120. A. Bartoli.** Nuovo Cim. (3), 19, 55-61, (1886).
La conducibilità elettrica delle mescolanze, etc. [Same as **105** and **123.**]
- 121. A. Bartoli.** Nuovo Cim. (3), 20, 121-125, (1886).
Sulla conducibilità elettrica delle combinazioni del carbonio allo stato liquido, ed in ispecie su la conducibilità delle combinazioni dei radicali acidi con gli alogeni, dei rodanati, delle essenze di senape, dei nitrili, dei solfuri e delle combinazioni organometalliche. [Same as **134.** Qualitative.]
- 122. A. Bartoli.** Nuovo Cim. (3), 20, 125-136, (1886).
Sulla dipendenza della conducibilità elettrica dalla temperatura nelle soluzioni degli alcoli $C_nH_{2n+2}O$ nei liquidi poco conduttori od isolanti. [Qualitative. Same as **133.**]
- 123. A. Bartoli.** Nuovo Cim. (3), 20, 136-139, (1886).
La conducibilità elettrica al punto critico. [Same as **133.**]
- 124. A. Bartoli.** Nuovo Cim. (3), 28, 25-40, (1890).
Sulla conducibilità elettrica di alcuni miscugli naturali di composti organici ed in particolare sulla conducibilità elettrica degli olii, dei grassi, delle cere, delle essenze, dei balsame e delle resine. [Same as **108.**]
 $T=0^\circ$ to 300° .
- 125. A. Bartoli.** Nuovo Cim. (3), 36, 57-70, (1894).
Sulla dipendenza della conducibilità, etc. [Same as **106** and **112.**]
- 126. A. Bartoli.** Rend. Accad. Lincei. (3), 8, 334-337, (1883-1884).
La conducibilità elettrica, etc. [Same as **100** and **115.**]
- 127. A. Bartoli.** Rend. Accad. Lincei. (4), 1, 546-550, (1884-1885).
Sulla conducibilità elettrica delle combinazioni, etc. [Same as **102** and **117.**]
- 128. A. Bartoli.** Rend. Accad. Lincei. (4), 1, 550-555, (1884-1885).
La conducibilità elettrica delle mescolanze, etc. [Same as **105** and **120.**]
- 129. A. Bartoli.** Rend. Accad. Lincei. (4), 1, 569-572, (1884-1885).
La conducibilità elettrica di alcuni composti, etc. [Same as **104** and **118.**]
- 130. A. Bartoli.** Rend. Accad. Lincei. (4), 1, 572-573, (1884-1885).
Sulla dipendenza della conducibilità, etc. [Same as **103** and **119.** Error in the title, dimetil for dietil, is corrected in **103.**]
- 131. A. Bartoli.** Rend. Accad. Lincei. (4), 1, 586-590, (1884-1885).
La conducibilità elettrica delle resine.
- 132. A. Bartoli.** Rend. Accad. Lincei. (4), 2, II, 122-129, (1885-1886).
Sulla dipendenza della conducibilità, etc. [Same as **122.**]
- 133. A. Bartoli.** Rend. Accad. Lincei. (4), 2, II, 129-131, (1885-1886).
La conducibilità elettrica al punto critico. [Same as **123.**]
- 134. A. Bartoli.** Rend. Accad. Lincei. (4), 2, II, 132-135, (1885-1886).
Sulla conducibilità elettrica, etc. [Same as **121.**]
- 135. (A. Bartoli, G. Papasogli.** Gaz. Chim. Ital. 13, 35-37, (1883).
Sull'elettrolisi dell'acqua e delle soluzioni di acido borico.) [Electrolytic.]
- 136. (A. Bartoli, G. Papasogli.** Gaz. Chim. Ital. 13, 37-55, (1883).
Ricerche sulla elettrolisi con elettrodi di carbone delle soluzioni dei composti binarii e di vari altri composti acidi e salini.) [Electrolytic.]
- 137. (A. Bartoli, G. Papasogli.** Gaz. Chim. Ital. 13, 281-286, (1883).
Elettrolisi delle soluzioni di ammoniaca e dei sali ammoniacali, con elettrodi di carbone.) [Electrolytic.]
- 138. (A. Bartoli, G. Papasogli.** Gaz. Chim. Ital. 13, 287-293, (1883).
Elettrolisi della glicerina con elettrodi di carbone e di platino.) [Electrolytic.]
- H. P. Bassett see H. C. Jones.
J. P. Batey see E. Knecht.

- 139. E. Bauer.** Zeit. Phys. Chem. 56, 215-222, (1906).
 Ueber die Dissociationskonstanten schwacher Säuren.
 $T = 25^\circ$.
Meas. Bauer; see **1349**.
 E. Bauer see P. T. Muller.
- 140. (H. Bauer.** Jour. Prakt. Chem. (2), 72, 201-210, (1905).
 Beitrag zur Natur der Kohlenstoffdoppelbindung.) [Quoted.]
Meas. M. Bauer; see **1720**.
- 141. E. Baur.** [Probably same as Bauer]. Ann. Chemie. 296, 95-100, (1897).
 Ueber die Leitfähigkeit des Nitramids.
 $T = 0^\circ$. κ_0 aq. $= 1.99 \times 10^{-6}$.
- 142. A. E. Baur.** [Same as E. Baur]. Zeit. Phys. Chem. 18, 183-184, (1895).
 Bestimmung einiger Leitfähigkeiten. [Corrected in **143**.]
 $T = 25^\circ$.
- 143. E. Baur.** [This is A. E. Baur.] Zeit. Phys. Chem. 23, 409-416, (1897).
 Bestimmung der Affinitätsgrößen und Dissociationswärmen einiger Stickstoffsäuren. [Given in **145**.]
 $T = 0^\circ$ to 40° . κ_{20} aq. $= 2.5 \times 10^{-6}$; sub.
- 144. E. Baur.** Zeit. Elektrochem. 11, 936-938, (1905).
 Ueber die Beziehung zwischen elektrolytischer Dissociation und Dielektrizitätskonstante.
- 145. E. Baur.** [This is A. E. Baur.] Dis. München. (1897).
 Bestimmungen von Umwandlungspunkten, Affinitätsgrößen, Dissociationswärmen, etc., auf elektrischem Wege. [Same as **143**, with addition of azotetrazole, acetic acid and nitroamide.]
 $T = 0^\circ$ to 40° . κ aq. sub.
 E. Baur see W. Kerp.
- 145a. W. M. Bayliss.** Arch. Fisiol. 7, 357-368, (1909).
 The dissociation of salts of weak acids with weak bases.
 $T = 11^\circ$ to 40° . R. O.
- 145b. W. M. Bayliss.** Jour. Physiol. 36, 221-252, (1907-1908).
 Researches on the nature of enzyme action. I. On the causes of the rise in electrical conductivity under the action of trypsin.
 $T = 10^\circ$ to 40° . R. O.
- 146. E. Beckmann, [B. Held.]** Arch. Pharm. 247, 110-120, (1909).
 Beiträge zur Beurteilung von Drogen.
 $T = 25^\circ$.
- 147. (E. Beckmann, G. Lockemann.** Zeit. Phys. Chem. 60, 385-398, (1907).
 Ueber Molekulargewichts- und Leitfähigkeitsbestimmungen in Nitrobenzol. [Inorganic.]
 $T = 18^\circ$.
- 147a. E. Beckmann, P. Waentig.** Zeit. Anorg. Chem. 67, 17-61, (1910).
 Kryoskopische Bestimmungen bei tiefen Temperaturen (-40° bis -117°).
 $T = -51^\circ$ to -120° .
- 148. H. Becquerel.** Compt. Rend. 136, 1173-1176, (1903).
 Conductibilité et ionisation résiduelle de la paraffine solide, sous l'influence du rayonnement du radium.
- 149. R. Behrend.** Zeit. Phys. Chem. 11, 466-491, (1893).
 Elektrometrische Analyse.
 A. Beisswenger see F. Fichter.
- 150. I. Bellucci.** Gaz. Chim. Ital. 35, I, 343-355, (1905).
 Sui composti solfocianici del palladio. [Same as **151**.]
 $T = 25^\circ$.

151. I. Bellucci. Rend. Accad. Lincei. (5), 13, II, 386-393, (1904).
Sui composti, etc. [Same as 150.]
I. Bellucci see A. Miolati.
J. Bence see A. v. Korányi.
152. A. Benedicenti. Arch. Fisiol. 1, 403-409, (1904).
Sui mutamenti fisico-chimici del sangue nelle variazioni della pressione sanguigna.
T = 25°. R. O.
153. A. Benedicenti. Arch. Fisiol. 3, 309-316, (1906).
Sui mutamenti fisico-chimici del sangue arterioso e venoso nelle variazioni della pressione sanguigna.
154. L. Benoist, D. Hurmuzescu. Jour. Phys. (3), 5, 110-111, (1896).
Nouvelles propriétés des rayons X.
155. (L. Benoist, D. Hurmuzescu. Jour. Phys. (3), 5, 358-362, (1896).
Action des rayons X sur les corps électrisés.) [Inorganic.]
156. (A. Benrath. Zeit. Phys. Chem. 64, 693-706, (1908).
Ueber die elektrische Leitfähigkeit von Salzen und Salzgemischen.) [Inorganic.]
Meas. A. Benrath; see 440.
- 156a. R. L. Benson, H. G. Wells. Jour. Biol. Chem. 8, 61-76, (1910).
The study of autolysis by physico-chemical methods.
T. Bentivoglio see G. Magnanini.
- Meas. Benz; see 487.
157. F. Bergius. Zeit. Phys. Chem. 72, 338-361, (1910).
Ueber absolute Schwefelsäure als Lösungsmittel. [Different from 157a.]
T = 25°. R. O. α of solvent sub.
- 157a. F. C. R. Bergius. Dis. Leipzig. (1907).
Ueber absolute Schwefelsäure als Lösungsmittel.
T = 25°. α of solvent sub.
- Meas. F. C. R. Bergius; see 750.
158. Earl of Berkeley, E. G. J. Hartley, J. Stephenson. Trans. R. Soc. London. A. 209, 319-336, (1909).
On the osmotic pressures of calcium ferrocyanide solutions. Part II. Weak solutions.
T = $0.00 \pm 0.01^\circ$. R. O. α_0 aq. = $1-2 \times 10^{-4}$.
159. (E. Berl. Ber. Deutsch. Chem. Ges. 37, 325-331, (1904).
Beiträge zur Kenntniss der Elektrolyse geschmolzener organischer Salze.)
B. Berlé see E. Bamberger.
- Meas. W. Bernays; see 657.
160. G. Berndt. Ann. Physik. (4), 23, 932-950, (1907).
Ueber den Einfluss des Magnetfeldes auf den Widerstand von Elektrolyten.
[Summary given in 161, 162 and 163.]
T = 34.2°.
161. G. Berndt. Jour. Phys. 7, 221-223, (1908).
Influence d'un champ magnétique sur la résistance des électrolytes. [Given in 160. Same as 162.]
162. G. Berndt. Phys. Zeit. 8, 778-779, (1907).
Ueber den Einfluss des Magnetfeldes auf den Widerstand von Elektrolyten.
[Given in 160. Same as 161.]
163. G. Berndt. Verhand. Deutsch. Phys. Ges. 9, 240-242, (1907).
Ueber den Einfluss des Magnetfeldes auf den Widerstand von Elektrolyten.
[Given in 160.]
Meas. Bersch; see 1374.
A. Berthelm see A. Rosenheim.

- 164. D. Berthelot.** *Ann. Chim. Phys.* (6), 23, 1-115, (1891).
Recherches sur les conductibilités électriques des acides organiques et de leurs sels.
T = 15.3° to 22°. κ aq. not sub.
- 165. D. Berthelot.** *Ann. Chim. Phys.* (6), 24, 1-45, (1891).
Étude sur la neutralisation des acides et des bases par la méthode des conductibilités électriques.
T = 14°.
- 166. D. Berthelot.** *Compt. Rend.* 109, 801-804, (1889).
Sur l'emploi des conductibilités électriques pour étudier les déplacements et partages des acides à fonction complexe.
T = 20°.
- 167. D. Berthelot.** *Compt. Rend.* 109, 864-867, (1889).
Conductibilités électriques et affinités multiples de l'acide aspartique.
T = 12° and 14°.
- 168. D. Berthelot.** *Compt. Rend.* 110, 703-705, (1890).
Sur les conductibilités des phénols et des acides oxybenzoïques.
T = 10°.
- 169. D. Berthelot.** *Compt. Rend.* 110, 1066-1069, (1890).
Sur les conductibilités des combinaisons de l'ammoniaque et l'aniline avec les acides oxybenzoïques.
- 170. D. Berthelot.** *Compt. Rend.* 112, 46-48, (1891).
Sur les conductibilités des acides organiques isomères et de leurs sels.
T = 17°.
- 171. D. Berthelot.** *Compt. Rend.* 112, 287-289, (1891).
Sur la basicité des acides organiques, d'après leur conductibilité. Acides monobasiques et bibasiques.
T = 17°.
- 172. D. Berthelot.** *Compt. Rend.* 112, 335-337, (1891).
Sur la conductibilité des acides organiques tribasiques; caractéristique nouvelle de la basicité.
- 173. (D. Berthelot.** *Compt. Rend.* 113, 851-854, (1891).
Sur les trois basicités de l'acide phosphorique.)
T = 17°.
- 174. (M. Berthelot, W. C. Matignon.** *Compt. Rend.* 113, 672-679, (1891).
Sur la chaleur de formation de l'hydrazine et de l'acide azothydrique.)
P. Berti see G. Bruni.
A. Besredka see N. Zelinsky.
- 175. H. G. Bethmann.** *Zeit. Phys. Chem.* 5, 385-422, (1890).
Ueber die Affinitätsgrößen einiger organischen Säuren und ihre Beziehungen zur Konstitution derselben.
T = 25°.
Meas. H. G. Bethmann; see 71, 728, 1178.
- 176. (M. Betti.** *Gaz. Chim. Ital.* 37, II, 5-13, (1907).
Costituzione chimica e potere rotatorio. II. Sull'influenza della funzione chimica dei gruppi sostituenti.)
- 177. H. H. Beveridge.** *Proc. R. Soc. Edinburgh.* 29, 648-667, (1908-1909).
Hydrolysis of salts of amphoteric electrolytes.
T = 0° and 25°. R. O. κ_{25} aq. = 0.8-1.3 $\times 10^{-4}$.
Meas. H. H. Beveridge; see 318.
H. H. Beveridge see J. Walker.
Bezrédka see Besredka.
- 178. (O. Biach.** *Zeit. Phys. Chem.* 50, 43-64, (1905).
Ueber Regelmässigkeiten in homologen Reihen.) [Theoretical and quoted.]

179. E. Bichat. Bul. Soc. Nancy. (2), 11, Bul. des Séances. 7°, 16-18, (1891).
 Sur la résistance électrique des dissolutions d'acide tartrique et des tartrates.
 $T=0^{\circ}$ to 42° . $U=\text{ohm}$.
Meas. S. L. Bigelow; see 1099.
- 179a. E. Billmann. Ber. Deutsch. Chem. Ges. 43, 568-580, (1910). *Meas.*
N. Bjerrum.
 Ueber die isomeren Zimtsäuren.
 $T=25^{\circ}$. R. O. $\kappa_{\text{aq.}}=2 \times 10^{-6}$.
180. J. Billitzer. Monatsh. 20, 666-678, (1899).
 Ueber die Affinitätsgrößen gesättigter Fettsäuren. [Same as 183.]
 $T=25^{\circ}$. $\kappa_{\text{aq.}}=2.4 \times 10^{-6}$.
181. J. Billitzer. Monatsh. 23, 489-501, (1902).
 Ueber die saure Natur des Acetylen. [No conductivity. Same as 184.]
182. J. Billitzer. Monatsh. 23, 502-511, (1902).
 Ueber die Fähigkeit des Kohlenstoffes, Ionen zu bilden.
183. J. Billitzer. Sitzber. Akad. Wien. 108, 2 b, 416-428, (1899).
 Ueber die Affinitätsgrößen, etc. [Same as 180.]
184. J. Billitzer. Sitzber. Akad. Wien. 111, 2 b, 221-233, (1902).
 Ueber die saure Natur des Acetylen. [Same as 181.]
185. (W. Biltz. Zeit. Phys. Chem. 40, 185-221, (1902).
 Zur Kenntnis der Lösungen anorganischer Salze in Wasser.)
186. W. Biltz, A. v. Vegesack. Zeit. Phys. Chem. 68, 357-382, (1909).
 Ueber den osmotischen Druck der Kolloide. Erste Mitteilung; Ueber die
 Rolle der Elektrolyte bei der Dialyse von Kolloiden.
 $T=25^{\circ}$. $\kappa_{\text{aq.}}=2 \times 10^{-6}$.
- 186a. W. Biltz, A. v. Vegesack. Zeit. Phys. Chem. 73, 481-512, (1910).
Meas. Pfenning.
 Ueber den osmotischen Druck der Kolloide. Zweite Mitteilung; Der osmo-
 tische Druck einiger Farbstofflösungen.
 $T=25^{\circ}$.
187. E. C. Bingham. Dis. Johns Hopkins. (1905).
 The conductivity and viscosity of solutions of certain salts in mixtures of
 acetone with methyl alcohol, with ethyl alcohol, and with water. [Same as
 904.]
- E. C. Bingham see H. C. Jones.
- Meas.* A. Binz; see 1899.
188. C. A. Bischoff. Ber. Deutsch. Chem. Ges. 24, 1041-1049, (1891).
 Ueber Trimethylbernsteinsäure.
189. C. A. Bischoff. Ber. Deutsch. Chem. Ges. 24, 1050-1064, (1891).
Meas. P. Walden.
 Ueber Aethyl-, Propyl-, und Benzylmethylbernsteinsäure.
190. C. A. Bischoff. Ber. Deutsch. Chem. Ges. 24, 1064-1074, (1891).
Meas. P. Walden.
 Weitere Beiträge zur Kenntniss der substituirten Bernsteinsäuren.
191. C. A. Bischoff. Ber. Deutsch. Chem. Ges. 24, 2001-2025, (1891).
Meas. P. Walden.
- Weitere Beiträge zur Kenntniss der Fumarsäurereihe.
192. C. A. Bischoff. Ber. Deutsch. Chem. Ges. 33, 924-931, (1900). *Meas.*
Centnerszwer.
- Phenoxypropionsäuren und Derivate.
193. C. A. Bischoff. Ber. Deutsch. Chem. Ges. 33, 931-939, (1900). *Meas.*
Centnerszwer.
 α -Phenoxy-Buttersäure, -Isobuttersäure und -Isovaleriansäure und deren
 Ester.

194. C. A. Bischoff. Ber. Deutsch. Chem. Ges. 40, 3150-3177, (1907).
Studien über Verkettungen. Bis-nitrophenoxy-malonsäureester, Bis-nitrophenoxy-acetylentetracarbonsäureester und unerwartete Isomeriefälle bei ersteren.
195. C. A. Bischoff, A. Hausdörfer. Ber. Deutsch. Chem. Ges. 25, 2280-2290, (1892). *Meas. P. Walden.*
- Ueber Paratolyglycin und seine Derivate.
196. C. A. Bischoff, E. Hjelt. Ber. Deutsch. Chem. Ges. 21, 2089-2097, (1888). *Meas. P. Walden.*
- Ueber symmetrische Diäthylbernsteinsäuren.
197. C. A. Bischoff, K. Jaunanicker. Ber. Deutsch. Chem. Ges. 23, 3399-3409, (1890). *Meas. P. Walden.*
- Ueber Pimelinsäuren verschiedenen Ursprungs.
198. C. A. Bischoff, N. Mintz. Ber. Deutsch. Chem. Ges. 23, 3410-3413, (1890). *Meas. P. Walden.*
- Ueber Aethyltrimethylbernsteinsäure. [The measurement of Zelinsky referred to here, is given in 2018.]
199. (C. A. Bischoff, N. Mintz. Ber. Deutsch. Chem. Ges. 25, 2326-2334, (1892).)
- Ueber Anilidoisobuttersäuren.) [Quoted.]
200. C. A. Bischoff, P. Walden. Ber. Deutsch. Chem. Ges. 22, 1819-1822, (1889).
- Ueber bisubstituirte Bernsteinsäuren. [Probably republished by P. Walden in 1838.]
201. C. A. Bischoff, P. Walden. Ber. Deutsch. Chem. Ges. 23, 1950-1958, (1890).
- Ueber das Leitvermögen der substituirten Bernsteinsäuren und Glutarsäuren. Hg. U.
202. C. A. Bischoff, P. Walden. Ber. Deutsch. Chem. Ges. 26, 1452-1460, (1893).
- Die Anwendung der dynamischen Hypothese auf Ketonsäurederivate.
K. Bittner see R. Wegscheider.
Meas. N. Bjerrum; see 179a.
203. (P. Blackman. Chem. News. 93, 284, (1906).
Relative strengths of acids.) [Theoretical.]
204. (P. Blackman. Chem. News. 94, 164, (1906).
Molecular conductivities; quantitative relation). [Theoretical and quoted.]
205. (P. Blackman. Chem. News. 94, 176, (1906).
Ionic conductivities at 25°.) [Theoretical and quoted.]
206. P. Blackman. Jour. Phys. Chem. 13, 144-153, (1909).
Tables of molecular conductivities. [Calculated from measurements by himself and by others.]
T = 18° and 25°.
207. P. Blackman. Jour. Phys. Chem. 13, 609-629, (1909).
An electronic theory. [Summary and enlargement of 203 to 206.]
208. (P. Blackman. Phil. Mag. (6), 11, 416-418, (1906).
Quantitative relation between molecular conductivities.) [Theoretical and inorganic.]
209. (P. Blackman. Phil. Mag. (6), 12, 150-152, (1906).
Atomic conductivities of the ions.) [Theoretical.]
210. (P. Blackman. Phil. Mag. (6), 14, 215-216, (1907).
Electrical ionic conductivities.)
- 210a. D. De Blasi. Arch. Fisiol. 7, 501-510, (1909).
Sul comportamento delle emazie di cane in miscela isotoniche di cloruro di sodio e saccarosio.

- 211. L. Bleekrode.** *Ann. Physik.* (3), 3, 161–196, (1878).
Ueber die Electricitätsleitung und Electrolyse der chemischen Verbindungen.
[Same as **212** and **213** together.]
- 212. L. Bleekrode.** *Phil. Mag.* (5), 5, 375–389, (1878).
On the electric conductivity and electrolysis of chemical compounds. [Same as first part of **211**.]
- 213. L. Bleekrode.** *Phil. Mag.* (5), 5, 439–451, (1878).
On the electric conductivity and electrolysis of chemical compounds. [Same as last part of **211**.]
Blom see Oker-Blom.
- 214. R. Blume.** *Dis. Rostock.* (1904).
Ueber die Einwirkung von Benzylamin und Methylbenzylamin auf das Chlor-methylat des 1-Phenyl-3-methyl-5-chlorpyrazols. [Same as **1256**.]
 $T = 18^\circ$. κ aq. $= 6.72 \times 10^{-4}$.
Meas. Blume; see **1256**.
- 214a. J. Böeseken.** *Rec. Trav. Chim.* 29, 275–292, (1910). # *Meas. H. Cowert*.
Sur les produits de l'action des amines primaires sur les dinitrosacyles (glyoximeperoxydes).
 $T = 25^\circ$.
A. Böhi see R. Lorenz.
- 215. C. Böhm-Wendt, E. v. Schweidler.** *Phys. Zeit.* 10, 379–382, (1909).
Ueber die spezifische Geschwindigkeit der Ionen in flüssigen Dielektrika.
- 216. W. Böttger.** *Zeit. Phys. Chem.* 48, 521–619, (1903).
Löslichkeitsstudien an schwer löslichen Stoffen.
 $T = 19.96^\circ$. κ aq. $= 0.92\text{--}1.18 \times 10^{-4}$.
- 217. W. Böttger.** *Zeit. Phys. Chem.* 56, 83–94, (1906).
Löslichkeitsstudien an schwer löslichen Stoffen. II. Die Löslichkeit von Silberchlorid, -bromid und -rhodanid bei 100° .
 $T = 100^\circ$. R. O.
S. Bogdan see P. A. Guye.
- 218. S. I. Bogdan.** *Dis. Genève.* (1902).
Application des méthodes physico-chimiques à l'analyse des liquides physiologiques. [Probably same as **703**.]
- 219. (A. Bogojawlensky, G. Tammann.)** *Zeit. Phys. Chem.* 23, 13–23, (1897).
Ueber den Einfluss des Drucks auf die Reaktionsgeschwindigkeit in homogenen flüssigen Systemen.)
- 220. A. Bogojawlensky, G. Tammann.** *Zeit. Phys. Chem.* 27, 457–473, (1898).
Ueber den Einfluss des Drucks auf das elektrische Leitvermögen von Lösungen.
 $T = 0^\circ$. Hg. U. κ aq. $= 5.52 \times 10^{-4}$; also 2.9×10^{-4} .
- 221. (A. Bogorodskij.)** *Jour. Russ. Phys.-chem. Soc.* 40, 192–197, (1908).
Specific electrical conductivity of molten KNO_3 and NaNO_3 .)
- 222. G. Boizard.** *Ann. Chim. Phys.* (8), 13, 289–361, (1908).
Sur la conductibilité électrique dans les mélanges d'acide ou de base et d'eau.
[Same as **224** and **225**. Text much fuller.]
 $T = 18^\circ$.
- 223. G. Boizard.** *Ann. Chim. Phys.* (8), 13, 433–479, (1908).
Sur la conductibilité électrique dans les mélanges d'acide ou de base et d'eau.
 $T = 25^\circ$.
- 224. G. Boizard.** *Jour. Phys.* (4), 7, 119–135, (1908).
Sur la conductibilité électrique dans les mélanges d'acide (ou de base) et d'eau.
[Given in **222** and **225**.]
 $T = 18^\circ$.

- 225. G. Boizard.** Bul. Soc. Franc. Phys. (1907), 308-324.
 Sur la conductibilité électrique dans les mélanges d'acide (ou de base) et d'eau.
 [Same as **222** and **224**.]
 T = 18°
 I. Bolin see H. Euler.
- 226. E. G. de Bollemont.** Bul. Soc. Chim. (3), 25, 28-38, (1901).
 Éthers oxyméthène-cyanacétiques. [k same as **227**. Λ also is given here.]
 T = 25°. R. O.
- 227. E. G. de Bollemont.** Compt. Rend. 129, 50-53, (1899).
 Étude de l'oxyméthylène-cyanacétate de méthyle et de quelques-uns de ses homologues. [For Λ and Λ of sodium salt see **226**. Only k is given here.]
 E. Bondi see R. Wegscheider.
- 228. S. Bondi.** Zeit. Physiol. Chem. 53, 8-13, (1907).
 Beiträge zur Chemie der Galle. II. Mitteilung. Ueber die Stärke der Glykocholsäure.
 T = 25°. κ aq. = 1.55×10^{-6} .
- 229. W. A. Bone, H. Henstock.** Jour. Chem. Soc. 83, 1380-1391, (1903).
 The elimination of hydrogen bromide from bromo-gem-dimethylsuccinic acid and from bromotrimethylsuccinic anhydride. [k, with slightly different value, but no Λ , given in **230**.]
 T = 25°.
- 230. W. A. Bone, H. Henstock.** Proc. Chem. Soc. 19, 247-248, (1903).
 The elimination of hydrogen bromide, etc. [k slightly different from **229**. No Λ given here.]
- 231. W. A. Bone, W. H. Perkin, Jr.** Jour. Chem. Soc. 67, 108-119, (1895).
Meas. J. Walker.
 The condensation of ethylic trimethylenedicarboxylate with ethylic malonate.
- 232. W. A. Bone, W. H. Perkin, Jr.** Jour. Chem. Soc. 67, 416-433, (1895).
Meas. J. Walker.
 Trimethylsuccinic and $\alpha\alpha_1$ -dimethylglutaric acids.
- 233. (W. A. Bone, W. H. Perkin, Jr.)** Jour. Chem. Soc. 69, 268-269, (1896).
 Note on the $\alpha\alpha_1$ -dimethylglutaric acids.)
- 234. W. A. Bone, C. H. G. Sprankling.** Jour. Chem. Soc. 75, 839-864, (1899).
 Researches on the alkyl-substituted succinic acids. Part I. Methods of preparation.
 T = 25°. [In the original, T is misprinted 23°; see **236**.]
- 235. W. A. Bone, C. H. G. Sprankling.** Jour. Chem. Soc. 77, 654-673, (1900).
 Researches on the alkyl-substituted succinic acids. Part II. s-Dipropyl, s-diisopropyl, and $\alpha\alpha_1$ -propylisopropyl-succinic acids. [k, but not μ , is given in **239** and **240** together, except for esters.]
 T = 25°.
- 236. W. A. Bone, C. H. G. Sprankling.** Jour. Chem. Soc. 77, 1298-1310, (1900).
 Researches on the alkyl-substituted succinic acids. Part III. Dissociation constants. [k, but not μ , is given in **241**.]
 T = 25°.
- 237. W. A. Bone, C. H. G. Sprankling.** Jour. Chem. Soc. 81, 29-50, (1902).
 The synthesis of alkyl tricarballic acids. [k, but not μ , is given in **242**.]
 T = 25°.

- 238. W. A. Bone, C. H. G. Sprankling.** Jour. Chem. Soc. 83, 1378-1380, (1903).
Dissociation constants of trimethylenecarboxylic acids. [k, but not μ , with slightly different values, is given in **243**.]
T = 25°.
- 239. W. A. Bone, C. H. G. Sprankling.** Proc. Chem. Soc. 15, 149, (1899).
The symmetrical di-isopropylsuccinic acids. [k is given in **235**. No μ here.]
- 240. W. A. Bone, C. H. G. Sprankling.** Proc. Chem. Soc. 16, 71-72, (1900).
The sym-dipropyl, sym-diisopropyl, and $\alpha\alpha^1$ -propylisopropylsuccinic acids. [k is given in **235**. No μ is given here.]
- 241. W. A. Bone, C. H. G. Sprankling.** Proc. Chem. Soc. 16, 184-185, (1900).
Researches on the alkyl-substituted succinic acids. III. Dissociation constants. [k is same as **236**. No μ is given here.]
- 242. W. A. Bone, C. H. G. Sprankling.** Proc. Chem. Soc. 17, 215-216, (1901).
The synthesis of alkyl-substituted tricarballic acids. [k is same as **237**. No μ is given here.]
- 243. W. A. Bone, C. H. G. Sprankling.** Proc. Chem. Soc. 19, 247, (1903).
Dissociation constants of trimethylenecarboxylic acids. [The values of k differ slightly from **238**. No μ is given here.]
- 244. W. A. Bone, J. J. Sudborough, C. H. G. Sprankling.** Jour. Chem. Soc. 85, 534-555, (1904).
The acid esters of methyl substituted succinic acids.
T = 25°.
- 245. (W. A. Bone, J. J. Sudborough, C. H. G. Sprankling.** Proc. Chem. Soc. 20, 64, (1904).
Acid esters of methylsuccinic acids.) [Qualitative.]
Bonomi da Monte see **DaMonte**.
- 246. V. Borelli.** Gaz. Chim. Ital. 38, I, 361-426, (1908).
Della costituzione di alcuni composti mercurici con cationi complessi. [Given in **248**.]
T = 25°.
- 247. V. Borelli.** Gaz. Chim. Ital. 39, I, 455-477, (1909).
Della costituzione di alcuni composti mercurici con cationi complessi. [Given in **248**.]
T = 25°.
- 248. V. Borelli.** Mem. Accad. Torino. (2), 58, 451-560, (1908).
Sulla costituzione di alcuni composti mercurici con cationi complessi. [Same as **246** and **247** together.]
T = 25°.
- 249. (I. Bosi.** Nuovo Cim. (4), 5, 249-266, (1897).
Sulla resistenza elettrica delle soluzioni saline in movimento.) [Inorganic.]
- 250. F. Bottazzi.** Arch. Fisiol. 3, 416-446, (1906).
Sulla regolazione della pressione osmotica negli organismi animali. Nota 1^a.
Pressione osmotica e conduttività elettrica dei liquidi di animali acquatici.
T = 11° to 30°.
- 251. F. Bottazzi.** Arch. Fisiol. 3, 547-556, (1906).
Sulla regolazione della pressione osmotica negli organismi animali. Nota 3^a.
Pressione osmotica e conduttività elettrica del succo muscolare, del siero di sangue e dell'urina dei pesci.
T = 21.5°.

- 252. F. Bottazzi.** Arch. Fisiol. 5, 243-252, (1908).
Ricerche sulla regolazione della pressione osmotica negli organismi animali.
Nota 4^a. Origine dell'urea nei Selacii.
T = 21° to 22°.
- 252a. F. Bottazzi.** Arch. Fisiol. 7, 579-637, (1909).
Ricerche sopra soluzioni di colloidi organici.
- 253. F. Bottazzi.** Ergebn. Physiol. 7, 161-402, (1908). # *Meas. Nicolosi*.
Osmotischer Druck und elektrische Leitfähigkeit der Flüssigkeiten der einzelligen, pflanzlichen und tierischen Organismen. [Contains a bibliography of osmotic pressure, freezing-point and conductivity of plant and animal fluids.]
T = 18° to 36°.
- 254. F. Bottazzi.** Rend. Accad. Lincei. (5), 18, II, 87-90, (1909).
Sul trasporto elettrico del glicogeno (e dell'amido).
T = 20°.
- 255. F. Bottazzi, G. Buglia, A. Jappelli.** Rend. Accad. Lincei. (5), 17, II, 49-57, (1908).
Ricerche chimico-fisiche sui liquidi degli animali- III. Variazioni della conduttività elettrica, viscosità e tensione superficiale del siero del sangue durante la dialisi.
T = 37°.
- 256. F. Bottazzi, G. D'Errico.** Arch. Gesamt. Physiol. 115, 359-385, (1906).
Physiko-chemische Untersuchungen über das Glykogen.
T = 37°. R. O.
- 257. F. Bottazzi, G. D'Errico, G. Jappelli.** Biochem. Zeit. 7, 431-470, (1907).
Wirkung des Adrenalins auf die Speichel- und Harnabsonderung.
T = 29.5° and 37°.
- 258. F. Bottazzi, A. Jappelli.** Biochem. Zeit. 11, 331-345, (1908).
Physiko-chemische Eigenschaften des Blutes und der Lymphe nach Transfusion homogenen Blutes.
T = 37°.
- 259. F. Bottazzi, N. Scalinci.** Rend. Accad. Lincei. (5), 17, II, 153-159, (1908).
Ricerche chimico-fisiche sulla lente cristallina.
- 260. F. Bottazzi, N. Scalinci.** Rend. Accad. Lincei. (5), 17, II, 305-316, (1908).
Ricerche chimico-fisiche sulla lente cristallina.
- 260a. F. Bottazzi, C. Victorow.** Rend. Accad. Lincei. (5), 19, II, 7-14, (1910.)
Sulle proprietà colloidali, e particolarmente sul trasporto elettrico dell'amido.
- 261. (W. R. Bousfield.** Zeit. Phys. Chem. 53, 257-313, (1905).
Ionengrößen in Beziehung zur Leitfähigkeit von Elektrolyten.) [Inorganic.]
- 262. (W. R. Bousfield, T. M. Lowry.** Proc. R. Soc. London. 71, 42-54, (1902-1903).
Influence of temperature on the conductivity of electrolytic solutions.) [Inorganic.]
- 263. E. Bouty.** Ann. Chim. Phys. (6), 27, 62-94, (1892.)
Sur la coexistence du pouvoir diélectrique et de la conductibilité électrolytique. [Same as 266.]
- 264. (E. Bouty.** Compt. Rend. 114, 533-535, (1892).
Sur la coexistence du pouvoir diélectrique et de la conductibilité électrolytique.) [Dielectric constants.]

- 265.** (E. Bouty. *Compt. Rend.* 114, 1421-1423, (1892).
Sur la coexistence du pouvoir diélectrique et de la conductibilité électrolytique.) [Dielectric constants.]
- 266.** E. Bouty. *Bul. Soc. Franc. Phys.* (1892), 244-258.
Sur la coexistence, etc. [Same as **265.**]
- 267.** (G. Bredig. *Ber. Deutsch. Chem. Ges.* 37, 4140, (1904).
Die Theorie der amphoteren Elektrolyte.) [A priority claim.]
- 268.** G. Bredig. *Zeit. Elektrochem.* 6, 33-36, (1899-1900). *Meas. K. Winkelblech.*
Ueber amphotere Elektrolyte und innere Salze. [Qualitative. See **1984** and **1985** for measurements.]
- 269.** G. Bredig. *Zeit. Phys. Chem.* 11, 829-831, (1893).
Die Dissociation des Wassers.
S. U. κ aq. sub.
- 270.** G. Bredig. *Zeit. Phys. Chem.* 13, 191-288, (1894).
Beiträge zur Stöchiometrie der Ionenbeweglichkeit.
T = 25°. S. U. κ aq. = $2-4 \times 10^{-6}$; sub.
- 271.** G. Bredig. *Zeit. Phys. Chem.* 13, 289-326, (1894).
Ueber die Affinitätsgrößen der Basen. [The values of k are about 16% too high, because of the value used for $\Lambda(\infty)$ of OH.]
T = 25.0°. S. U. κ aq. = $1-2 \times 10^{-6}$; not sub.
Meas. Bredig; see **81**, **503**.
- 272.** (G. Bredig, W. Fraenkel. *Zeit. Elektrochem.* 11, 525-528, (1905).
Eine neue, sehr empfindliche Wasserstoffionen-Katalyse.)
- 273.** G. Bredig, A. Usoff. *Zeit. Elektrochem.* 3, 116-117, (1896-1897).
Ist Acetylen ein Elektrolyt?
T = 25° for part of this.
- 274.** J. Breddt. *Ann. Chemie.* 366, 1-70, (1909). *Meas. E. Salm.*
Untersuchungen über die Constitution des Kamphers und seiner Derivate.
- 275.** M. B. Breed. *Dis. Bryn Mawr.* (1901).
The polybasic acids of mesitylene.
T = 25°. κ aq. = 2.2×10^{-6} .
- 276.** (R. Bressana. *Mem. R. Acad. Madrid.* 24, 1-488, (1906).
La polarización rotatoria de la luz.) [Quoted.]
- 277.** (M. Brillouin. *Ann. Chim. Phys.* (8), 7, 289-320, (1906).
Considérations théoriques sur la dissociation électrolytique. — Influence du dissolvant sur la stabilité des molécules dissoutes.)
A. Bringhenti see G. Carrara.
C. Brittlebank see V. Kohlschütter.
- 278.** J. Brode, W. Lange. *Arbeit. k. Gesundh.* 30, 1-54, (1909).
Beiträge zur Chemie des Essigs mit besonderer Berücksichtigung seiner Untersuchungsverfahren.
- 279.** A. C. Brown, J. Walker. *Ann. Chemie.* 261, 107-128, (1891).
Elektrolytische Synthese zweibasischer Säuren. [Same as **283.**]
T = 25°.
- 280.** A. C. Brown, J. Walker. *Ann. Chemie.* 274, 41-71, (1893).
Elektrolytische Synthese zweibasischer Säuren. [Same as **284.** k , but not μ , is given in **281** and **282.**]
T = 25°.
- 281.** C. Brown, J. Walker. *Proc. R. Soc. Edinburgh.* 18, 95-97, (1890-1891).
Electrolytic synthesis of dibasic acids. Alkyl derivatives of succinic acid.
[This Brown is A. C. Brown. Same as first part of **280** for k .]

- 282. C. Brown, J. Walker.** Proc. R. Soc. Edinburgh. 19, 243-248, (1891-1892).
 Synthesis by means of electrolysis. [This Brown is A. C. Brown. Same as last part of 280 for k.]
- 283. A. C. Brown, J. Walker.** Trans. R. Soc. Edinburgh. 36, 211-224, (1889-1891).
 Electrolytic synthesis of dibasic acids. [Same as 279.]
 T = 25°. Hg. U.
- 284. A. C. Brown, J. Walker.** Trans. R. Soc. Edinburgh. 37, 361-379, (1891-1895).
 Electrolytic synthesis of dibasic acids. [Same as 280.]
- 285. W. M. Bruce.** Jour. Am. Chem. Soc. 26, 419-436, (1904).
 On the oxygen ethers of ureas. [Same as part of 287.]
- 286. W. M. Bruce.** Jour. Am. Chem. Soc. 26, 449-464, (1904).
 On the oxygen ethers of ureas. [Same as part of 287.]
 T = 25° ± 0.01°. R. O.
- 287. W. M. Bruce.** Dis. Chicago. (1904).
 On the oxygen ethers of urea. [Same as 285 and 286 together.]
- 288. (J. W. Brühl.** Ber. Deutsch. Chem. Ges. 24, 3701-3737, (1891).
 Untersuchungen über die Terpene und deren Abkömmlinge.)
- 289. J. W. Brühl, H. Schröder.** Ber. Deutsch. Chem. Ges. 37, 2512-2524, (1904).
 Physiko-chemische Untersuchungen der Camphocarbonsäure, ihrer Salze, Ester und Estersalze.
 T = 17°.
- 290. J. W. Brühl, H. Schröder.** Zeit. Phys. Chem. 50, 1-42, (1905).
 Ueber Salzbildungen in Lösungen, insbesondere bei tautomerisierbaren Körpern (Pseudosäuren, Pseudobasen).
- 290a. B. Brunacci.** Arch. Fisiol. 8, 421-457, (1910).
 Sulla funzione secretoria della parotide nell'uomo. Nota prima. Influenza della qualità dello stimolo sulle proprietà fisico-chimiche della saliva parotidea.
 T = 37°.
- R. F. Brunel** see A. Michael.
- 291. L. Bruner.** Ber. Deutsch. Chem. Ges. 36, 3297-3298, (1903). *Meas. J. Kozak, and G. Mariasz.*
 Ueber Nitromethan als Lösungsmittel.
 T = 18°.
- 291a. (L. Bruner.** Zeit. Elektrochem. 16, 204-205, (1910).
 Ueber die Leitfähigkeit der Halogene in Nitrobenzol.)
- 292. (L. Bruner.** Bul. Acad. Cracov. (1901), 464-473.
 Ueber die Dissociation des Chloralhydrates und Chloralalkoholates in Lösungen.)
- 293. (L. Bruner.** Bul. Acad. Cracov. (1907), 731-738.
 Ueber die elektrolytische Leitfähigkeit von Brom und Jod in Nitrobenzol-lösungen.) [Inorganic.]
 T = 7° and 20°.
- 294. G. Bruni.** Zeit. Elektrochem. 14, 701-706, (1908). *Meas. A. Aita.*
 Vergleichende Untersuchungen über Salzbildung und über die Basizität der Säuren vom physiko-chemischen Standpunkte. [Acetic, formic and chloroacetic acids are given in 296. See 1716.]
 T = 25°. κ aq. = 1×10^{-6} sub. when necessary.
- 295. G. Bruni.** Zeit. Elektrochem. 14, 729-734, (1908). *Meas. A. Aita.*
 Vergleichende Untersuchungen über Salzbildung und über die Basizität der Säuren vom physiko-chemischen Standpunkte. [See 1716.]

296. G. Bruni, A. Aita. Rend. Accad. Lincei. (5), 17, II, 295-303, (1908). Contributi allo studio dei fenomeni di salificazione dal punto di vista chimico-fisico. [Given in **294.**]

T = 25°.

297. G. Bruni, P. Berti. Gaz. Chim. Ital. 30, II, 151-157, (1900). Sulle proprietà dell'iposotite come solvente. [Qualitative. Same as **298.**]

298. G. Bruni, P. Berti. Rend. Accad. Lincei. (5), 9, I, 321-326, (1900). Sulle proprietà, etc. [Same as **297.**]

299. G. Bruni, C. Sandonnini. Zeit. Elektrochem. 14, 823-825, (1908). Vergleichende Untersuchungen über Salzbildung und über die Basizität der Säuren vom physiko-chemischen Standpunkte.

$\kappa_{aq} = 3 \times 10^{-6}$ sub. when necessary.

299a. G. Bruni, C. Sandonnini. Zeit. Elektrochem. 16, 223-227, (1910). Vergleichende Untersuchungen über Salzbildung vom physikochemischen Standpunkte.

T = 25°.

B. R. de Bruyn see A. F. Holleman.

300. C. A. L. de Bruyn. Rec. Trav. Chim. 18, 299-301, (1899). *Meas. G. v. d. Sleen.*

Sur la démonstration de la force relative des acides. [Full tables of Λ and κ are given in **1633** and **1634.**]

C. L. de Bruyn see E. Cohen.

L. de Bruyn, E. Cohen. Verslag. Akad. Amsterdam. (1902-1903). See E. Cohen, C. L. de Bruyn.

301. G. B. Bryan. Phil. Mag. (5), 45, 253-272, (1898). On the determination of the conductivity of liquids in thin layers.

T = 9° to 12°.

Meas. K. Bube; see **507.**

302. K. Buch. Ber. Deutsch. Chem. Ges. 41, 692-695, (1908). Ueber Ammonium-phenolat.

T = 25°.

302a. K. Buch. Zeit. Phys. Chem. 70, 66-87, (1910). Die Hydrolyse der Ammoniumsalze flüchtiger Säuren.

T = 25°.

303. K. Buchka, A. Magalhães. Ber. Deutsch. Chem. Ges. 24, 674-680, (1891). *Meas. Nernst.* Ueber das Cytisin.

T = 18°. Hg. U.

Meas. M. Buchner; see **736, 781, 1094.**

L. Buchstab see N. Zelinsky.

304. E. Buckingham. Zeit. Phys. Chem. 14, 129-148, (1894). Ueber einige Fluoreszenzerscheinungen.

T = 25°.

305. E. Buckingham. Trans. Am. Electrochem. Soc. 9, 265-276, (1906). The settling of suspensions.

T = 13° to 25°. R. O.

305a. C. Bülow, (K. Haas). Ber. Deutsch. Chem. Ges. 43, 3401-3412, (1910).

Synthese von Derivaten des 1,2,7-Pyrazo-pyridins, einer neuen Ordnung homo-(C. C.)-kondensierter, bisheterocyclischer Verbindungen.

T = 25°.

E. Bürkle see H. Goldschmidt.

- 306. G. Buglia.** Arch. Fisiol. 4, 56-66, (1907).
Variazioni fisico-chimiche del siero di sangue durante l'invecchiamento.
T = 30°.
- 307. G. Buglia.** Biochem. Zeit. 13, 400-439, (1908).
Ueber die Regulierung der physiko-chemischen Eigenschaften des Blutes nach Injektionen von verschiedenen Lösungen.
T = 37°.
- 308. G. Buglia.** Zeit. Chem. Ind. Kolloid. 2, 353-354, (1908).
Ueber einige physikalisch-chemische Merkmale der homogenisierten Milch.
T = 37°.
G. Buglia see F. Bottazzi.
" " see L. Sabbatani.
- 309. G. Buglia, L. Karczag.** Rend. Accad. Lincei. (5), 18, II, 374-380, (1909).
Influenza della configurazione stereochimica su alcune proprietà fisico-chimiche dei colloidi organici.
T = 37°.
- 310. (G. Buglia, L. Karczag.** Rend. Accad. Lincei, (5), 18, II, 474-481, (1909).
Influenza della configurazione stereochimica su alcune proprietà fisico-chimiche dei colloidi organici.)
310a. F. J. J. Buijtendijk. Verslag Akad. Amsterdam. 18, 261-264, (1909).
Verslag Akad. Amsterdam, English translation, 12, 377-380.
Over de veranderingen in het bloedserum van haaien na verbloeding.
T = 25°.
- 310b. F. J. J. Buijtendijk.** Verslag Akad. Amsterdam. 18, 264-267, (1909).
Verslag Akad. Amsterdam, English translation, 12, 380-383.
Over de samenstelling der urine van haaien, bij normale en versterkte diurese.
T = 25°.
O. D. E. Bunge see A. Michael.
O. Burger see J. Sand.
- 311. (C. H. Burgess, D. L. Chapman.** Jour. Chem. Soc. 85, 1305-1317, (1904).
The nature of a solution of iodine in aqueous potassium iodide.) [Inorganic.]
312. (C. H. Burgess, D. L. Chapman. Proc. Chem. Soc. 20, 62-63, (1904).
The nature of, etc.) [Same as 311.]
- 313. E. F. Burton.** Phil. Mag. (6), 17, 583-597, (1909).
The action of electrolytes on copper colloidal solutions.
T = 18°. $\kappa_{aq.} = 2 \times 10^{-4}$.
- 314. M. Busch, G. Mehrrens.** Ber. Deutsch. Chem. Ges. 38, 4049-4068, (1905). * Meas. Jordis.
Ueber Endiminotriazole.
T = 25°.
Bz see Tijmstra Bz.

C.

- 315. H. P. Cady.** Jour. Phys. Chem. 1, 707-713, (1896-1897).
The electrolysis and electrolytic conductivity of certain substances dissolved in liquid ammonia.
T = -34°.
- 316. P. Cahn-Speyer.** Monatsh. 28, 803-817, (1907). Meas. N. L. Müller.
Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. XVI. Abhandlung; Ueber Abkömmlinge der Aminoterephthalsäure. [Same as 317.]

- 317. P. Cahn-Speyer.** Sitzber. Akad. Wien. 116, 2b, 705-719, (1907).
Meas. N. L. Müller.
Untersuchungen über die Veresterung, etc. [Same as 316.]
- 318. J. C. Cain.** Jour. Chem. Soc. 91, 1049-1056, (1907). *Meas. H. H. Beveridge.*
The constitution of the diazo-compounds.
- 319. P. Calame.** Zeit. Phys. Chem. 27, 401-420, (1898). *Meas. Brauer, Dittrich, Martin, Smith, Winkelblech.*
Ueber die Dissociation mehrwertiger Salze. [Same as 320.]
T = 25°.
- 320. P. Calame.** Dis. Leipzig. (1898). *Meas. as 319.*
Ueber die Dissociation, etc. [Same as 319].]
- 320a. G. Calcagni.** Rend. Accad. Lincei. (5), 19, II, 290-293, (1910).
Sul lattato di berillio.
T = 25°.
- 320b. G. Calcagni.** Rend. Accad. Lincei. (5), 19, II, 333-337, (1910).
Studi sulla capacità degli ossidrili alcoolici a formare complessi.
Meas. B. P. Caldwell; see 1981.
B. P. Caldwell see H. C. Jones.
- 321. K. S. Caldwell.** Chem. News. 96, 75-76, (1907).
On the conductivity of electrolytes in pyridine and other solvents. [Given in 754.]
K. S. Caldwell see A. Hantzsch.
- 322. R. J. Caldwell.** Proc. R. Soc. London. A, 78, 272-295, (1906).
Studies of the processes operative in solutions. Part I. The sucroclastic action of acids as influenced by salts and non-electrolytes.
R. O.
- 323. (R. J. Caldwell, R. Whympers.** Proc. R. Soc. London. A, 81, 112-117, (1908-1909).
The determination of optical rotatory power.)
- 324. R. J. Caldwell, R. Whympers.** Proc. R. Soc. London. A, 81, 117-140, (1908-1909).
The changes effected by the reciprocal interference of cane-sugar and other substances (salts and non-electrolytes) in aqueous solutions.
 α_{215} aq. less than 2×10^{-6} .
- 325. C. Camichel.** Jour. Phys. (4), 4, 873-884, (1905).
Fluorescence.
T = 16° to 21°.
- 326. G. Campenhausen.** Dis. Heidelberg. (1896). *Meas. A. Pfaff.*
I. Ueber Oxytrimethylbernsteinsäure. [Same as 64.]
G. v. Campenhausen see K. Auwers.
- 327. (A. Campetti.** Nuovo Cim. (3), 35, 225-234, (1894).
Sull'influenza del solvente sulla velocità degli ioni.) [Inorganic.]
- 328. (A. Campetti.** Atti Accad. Torino. 38, 64-75, (1902-1903).
Sul calore di dissociazione elettrolitica.)
- 329. (A. Campetti.** Atti Accad. Torino. 43, 1071-1094, (1907-1908).
Sulla variazione del grado di dissociazione di alcuni elettroliti colla temperatura.) [Inorganic.]
- 330. (A. Campetti, M. Nozari.** Atti Accad. Torino. 40, 177-185, (1904-1905).
Sulla variazione del grado di dissociazione elettrolitica colla temperatura.) [Inorganic.]
T. Carlson see P. Klason.

- 331.** (A. Garzón y Carmona. *Rev. R. Acad. Madrid.* 8, 70-94, (1909-1910). Sobre la conductibilidad de disoluciones de ClK y ClNa en mezclas de agua y alcohol metílico. (Variaciones con el tanto por ciento de alcohol, la concentración y la temperatura.) [Inorganic.]
 $T = 0^\circ$ to 50° .
- 332.** N. Caro, H. Grossmann. *Chem. Ztg.* 33, 734-735, (1909). *Meas. Magnus.*
 Zur Kenntnis der chemischen Natur des Dicyandiamids.
- 333.** (G. Carrara. *Gaz. Chim. Ital.* 23, II, 587-595, (1893). Sulla dissociazione elettrolitica in relazione col potere rotatorio ottico.) [Quoted.]
- 334.** G. Carrara. *Gaz. Chim. Ital.* 24, II, 504-535, (1894). Dissociazione elettrolitica e legge della diluizione nei solventi organici. [Same as **340.**]
 $T = 25^\circ$.
- 335.** G. Carrara. *Gaz. Chim. Ital.* 26, I, 119-195, (1896). Per la teoria della dissociazione elettrolitica in solventi diversi dall'acqua. I. Alcool metílico.
 $T = 25^\circ$. α alcool sub.
- 336.** G. Carrara. *Gaz. Chim. Ital.* 27, I, 207-222, (1897). Per la teoria della dissociazione elettrolitica in solventi diversi dall'acqua. II. Acetone.
 α acetone sub.
- 337.** G. Carrara. *Gaz. Chim. Ital.* 27, I, 422-440, (1897). Sulla dissociazione elettrolitica dell'alcool metílico e dell'acqua in esso disciolta. [In two cases Carrara distilled the alcohol over sodium. Cf. Loomis 1123 and 1124.]
- 338.** G. Carrara. *Gaz. Chim. Ital.* 33, I, 241-311, (1903). Per la teoria della dissociazione elettrolitica in solventi diversi dall'acqua. III. Influenza del solvente sopra i numeri di trasporto. [Same as **341.**]
 $[T \text{ probably } 25^\circ.]$ R. O.
- 339.** (G. Carrara. *Gaz. Chim. Ital.* 37, I, 525-561, (1907). Elettrochimica delle soluzioni non acquose.) [Same as **342.**]
- 340.** G. Carrara. *Rend. Accad. Lincei.* (5), 3, II, 383-390, (1894). Dissociazione elettrolitica, etc. [Same as **334.**]
- 341.** G. Carrara. *Mem. Accad. Lincei.* (5), 4, 338 and 339-387, (1901). Per la teoria della dissociazione, etc. [Same as **338.**]
- 342.** (G. Carrara. *Mem. Accad. Lincei.* (5), 6, 268-291, (1906-1908). Elettrochimica delle soluzioni non acquose.) [A review of work done up to date on the electrical conductivity of non-aqueous solutions. Same as **339.**]
- 343.** G. Carrara, L. D'Agostini. *Atti Ist. Veneto.* 62, II, 793-802, (1902-1903). Sul grado di dissociazione elettrolitica dell'alcool metílico.
- 344.** G. Carrara, A. Brighenti. *Gaz. Chim. Ital.* 38, I, 698-708, (1908). Sopra i potenziali di scarica degli ioni contenuti nelle soluzioni di alcoolati alcalini. [Same as **345.**]
- 345.** G. Carrara, A. Brighenti. *Rend. R. Ist. Lombardo.* (2), 40, 1190-1200, (1907). Sopra i potenziali, etc. [Same as **344.**]
- 346.** (G. Carrara, M. G. Levi. *Gaz. Chim. Ital.* 30, II, 197-217, (1900). Sopra elettrostrizione degli ioni in solventi organici.) [Quoted. See **348.**]
- 347.** G. Carrara, M. G. Levi. *Gaz. Chim. Ital.* 32, II, 36-53, (1902). Sui coefficienti di temperatura della conducibilità elettrica delle soluzioni in

acqua e solventi organici. Influenza della sopraffusione e del massimo di densità. [Same as 349.]

$T = -3^{\circ}$ to 25° . R. O.

348. (G. Carrara, M. G. Levi. *Nuovo Cim.* (4), 12, 284-288, (1900).

Sopra elettrostrizione, etc.) [The text is an abridgement of 346.]

349. G. Carrara, M. G. Levi. *Atti Ist. Veneto.* 61, II, 525-542, (1901-1902).

Sui coefficienti di temperatura, etc. [Same as 347.]

350. G. Carrara, U. Rossi. *Gaz. Chim. Ital.* 27, II, 505-532, (1897).

Sopra l'energia di alcune basi a funzione mista. [Same as 351, 352 and 353 together.]

κ aq. sub.

351. (G. Carrara, U. Rossi. *Rend. Accad. Lincei.* (5), 6, II, 152-158, (1897). Sopra l'energia, etc.) [Same as first part of 350.]

352. G. Carrara, U. Rossi. *Rend. Accad. Lincei.* (5), 6, II, 208-216, (1897). Conducibilità elettrica di alcune basi a funzione mista e dei loro cloridrati. [Same as middle part of 350.]

353. G. Carrara, U. Rossi. *Rend. Accad. Lincei.* (5), 6, II, 219-226, (1897). Catalisi dell'acetato di metile per mezzo dei sali di alcune basi a funzione mista. [Same as last part of 350. The affinity constants given here are not ionization constants; see 1864.]

354. P. Carré. *Bul. Soc. Chim.* (3), 33, 1314-1316, (1905).

Sur la conductibilité moléculaire des éthers phosphoriques. [Same as 355.]

$T = 25^{\circ}$. R. O. κ aq. $= 0.6 \times 10^{-6}$.

355. P. Carré. *Compt. Rend.* 141, 764-766, (1905).

Sur la conductibilité, etc. [Same as 354.]

356. (C. G. Carroll. *Am. Chem. Jour.* 36, 594-599, (1906).

Ionic velocity and ionic hydration.)

357. C. G. Carroll. *Dis. Johns Hopkins.* (1904).

I. A study of the conductivity of certain electrolytes, etc. [Same as 908.]

C. G. Carroll see H. C. Jones.

G. A. Carse see T. H. Laby.

358. (G. A. Carse, T. H. Laby. *Proc. Cambridge Phil. Soc.* 14, 1-12, (1907-1908).

A relation between the velocity and volume of organic ions in aqueous solutions.)

359. (W. Cassie. *Proc. R. Soc. London.* 46, 357-358, (1889).

On the effect of temperature on the specific inductive capacity of a dielectric.)

360. C. Cattaneo. *Rend. Accad. Lincei.* (5), 2, I, 295-298, (1893).

Coefficiente negativo di temperatura per la conducibilità elettrica delle soluzioni eterree. [Given in 366.]

$T = 0^{\circ}$ to 25° . Hg. U.

361. C. Cattaneo. *Rend. Accad. Lincei.* (5), 2, II, 112-119, (1893).

Sulla conducibilità elettrica dei sali disciolti in glicerina.

$T = 0^{\circ}$ to 24.8° .

362. C. Cattaneo. *Rend. Accad. Lincei.* (5), 4, II, 63-70, (1895).

Sulla conducibilità elettrica dei sali in vari solventi.

$T = 18^{\circ}$. Hg. U.

363. (C. Cattaneo. *Rend. Accad. Lincei.* (5), 4, II, 73-77, (1895).

Considerazioni sulla conducibilità elettrica dei sali in vari solventi.) [Inorganic and quoted.]

364. (C. Cattaneo. *Rend. Accad. Lincei.* (5), 5, II, 207-214, (1896).

Dell'influenza del solvente sulla velocità degli ioni.) [Inorganic.]

365. (C. Cattaneo. *Rend. Accad. Lincei.* (5), 6, I, 279-286, (1897).
Sul numero di trasporto del cloro dell'acido cloridrico in solventi diversi.)
[Inorganic.]

366. C. Cattaneo. *Atti Accad. Torino.* 28, 617-631, (1892-1893).
Sulla conducibilità elettrica dei sali in varii solventi. [Part is in **360.**]
Hg. U.

Centnerszwer see Centnerszwer.

367. M. Centnerszwer. *Jour. Russ. Phys.-chem. Soc.* 33, 545-547, (1901).
Some properties of liquid cyanogen. [Same as part of **369.**]

368. M. Centnerszwer. *Jour. Russ. Phys.-chem. Soc.* 33, 547-549, (1901).
The ionizing properties of liquid hydrogen cyanide. [Same as part of **369.**]
T=0°. S. U.

369. M. Centnerszwer. *Zeit. Phys. Chem.* 39, 217-224, (1902).
Ueber lösende und dissociierende Eigenschaften des flüssigen Cyans und des
flüssigen Cyanwasserstoffs. [Same as **367** and **368** together.]
T=0°. S. U.

Meas. M. Centnerszwer; see **192**, **193**, **1843**.

M. Centnerszwer see P. Walden.

370. E. E. Chandler. *Jour. Am. Chem. Soc.* 30, 694-713, (1908).
The ionization constants of the second hydrogen ion of dibasic acids. [Cor-
rected in **1917.**]
T=0° and 25°±0.01°. R. O.

371. A. M. Chanoz. *Jour. Phys.* (4), 6, 114-127, (1907).
Étude sur les contacts liquides directs. [Given in **372.**]

372. A. M. Chanoz. *Ann. Univ. Lyon. I, Fasc.* 18, 1-99, (1906).
Recherches expérimentales sur les contacts liquides. [Contains also meas-
urements not given in **371.**]

D. L. Chapman see C. H. Burgess.

373. J. Chaudier. *Ann. Chim. Phys.* (8), 15, 67-140, (1908).
Sur les propriétés électro-optiques des liqueurs mixtes.

374. J. Chaudier. *Jour. Phys.* (4), 8, 422-439, (1909).
Étude expérimentale des propriétés électro-optiques des liqueurs mixtes.

375. G. Chavanne. *Ann. Chim. Phys.* (8), 3, 507-574, (1904).
Sur l'acide isopyromucique.

375a. H. Chick, C. J. Martin. *Jour. Physiol.* 40, 404-430, (1910).
On the "heat coagulation" of proteins.

376. A. Chilesotti. *Gaz. Chim. Ital.* 34, II, 493-503, (1904).
Di due sali complessi di molibdeno.
T=25°.

376a. A. Chistoni. *Arch. Fisiol.* 8, 193-204, (1910).
Influenza dello jodo sulle costanti fisico-chimiche del sangue.
T=25°.

Chroushtchoff see Chroustchoff.

377. P. Chroustchoff. *Compt. Rend.* 108, 1003-1006, (1889).
Sur l'étude de conductibilité électrique des dissolutions salines, appliquée
aux problèmes de mécanique chimique. [Most of the measurements are
same as **380**, but T varies slightly in some cases, and formic acid is not
given here.]

T=18° to 21°.

378. P. Chroustchoff. *Compt. Rend.* 108, 1100-1102, (1889).
De la conductibilité électrique des dissolutions salines. Déplacement réci-
proques des acides.

T=18° to 21°.

- 379. P. Chroustchoff.** *Compt. Rend.* 108, 1161-1162, (1889).
 Sur l'étude de la conductibilité électrique des dissolutions salines, appliquée aux problèmes de mécanique chimique. Doubles décompositions.
 $T = 20^{\circ}$.
- 380. P. Chroustchoff.** *Jour. Russ. Phys.-chem. Soc.* 22, 115-116, (1890).
 Electrical conductivity of aqueous solutions of some salts and acids. [Almost the same as 377.]
- 381. P. Chroustchoff, V. Pachkoff.** *Compt. Rend.* 108, 1162-1164, (1889).
 Sur la conductibilité électrique des dissolutions salines contenant des mélanges de sels neutres. [Same as 382.]
- 382. P. Chroustchoff, V. Pachkoff.** *Jour. Russ. Phys.-chem. Soc.* 22, 110-115, (1890).
 Electrical conductivity of solutions of mixtures of some neutral salts. [Same as 381.]
- Chroustchoff see Chroustchoff.
 Chruščov see Chroustchoff.
- 383. G. di Ciommo.** *Phys. Zeit.* 3, 373-374, (1901-1902).
 Ueber die elektrische Leitungsfähigkeit von isolierenden Flüssigkeiten und ihren Mischungen. [Apparently an abridgement of 386.]
- 384. G. di Ciommo.** *Phys. Zeit.* 4, 291-293, (1902-1903).
 Ueber die ionisierende Kraft einiger nichtleitenden organischen Flüssigkeiten.
- 385. G. di Ciommo.** *Nuovo Cim.* (5), 2, 81-87, (1901).
 Sulla conducibilità elettrica degli idrati di sodio e potassio in soluzioni gliceriche.
 Hg. U.
- 386. G. di Ciommo.** *Nuovo Cim.* (5), 3, 97-121, (1902).
 Sulla conducibilità elettrica dei liquidi isolanti e dei loro miscugli. [Abstracted in *Zeit. Phys. Chem.* 44, 508, (1903). See 383.]
 Hg. U.
- 387. L. Claisen.** *Ann. Chemie.* 297, 1-98, (1897). *Meas. Holleman.*
 Untersuchungen über die Oxymethylenverbindungen.
 $T = 2.6^{\circ}$ to 23.5° .
Meas. R. W. L. Clarke; see 1051, 1052.
 P. Claussner see A. Wohl.
- 388. J. A. Clinch.** *Dis. Göttingen.* (1904).
 Ueber einige anorganische Kolloide und Metallacetylacetonate.
 κ aq. sub.
 A. M. Clover see P. C. Freer.
- 388a. A. M. Clover, H. C. Jones.** *Am. Chem. Jour.* 43, 187-223, (1910).
 The conductivities, dissociations, and temperature coefficients of conductivity between 35° and 80° of solutions of a number of salts and organic acids.
 $T = 35^{\circ}$ to 80° . S. U. κ aq. $= 2.0 \times 10^{-6}$; sub.
- 389. G. Coffetti.** *Gaz. Chim. Ital.* 30, II, 235-246, (1900).
 Sopra l'energia di alcuni acidi organici non carbossilici. [Fiorini is quoted. See 577 for original.]
 $T = 25^{\circ}$.
- 390. (G. Coffetti.** *Gaz. Chim. Ital.* 33, I, 53-68, (1903).
 Contributo alla conoscenza delle relazioni fra la natura e la proprietà del solvente e la sua forza ionizzatrice. Conducibilità elettrica e suoi coefficienti di temperatura in solventi organici.) [Inorganic.]
- 391. E. Cohen.** *Zeit. Phys. Chem.* 25, 1-45, (1898).
 Experimentaluntersuchung über die Dissociation gelöster Körper in Alkohol-Wassergemischen.
 $T = 18^{\circ}$. Hg. U. κ_{18} aq. is less than 0.24×10^{-6} .

- 392. E. Cohen.** Zeit. Phys. Chem. 37, 69-83, (1901). *Meas. Y. Ōsaka.*
Studien über die Inversion.
Meas. E. Cohen; see 11.
- 393. E. Cohen, C. L. de Bruyn.** Verslag Akad. Amsterdam. 11, 621-626,
(1902-1903). Verslag Akad. Amsterdam, English translation, 5, 551-
556, (1902-1903).
Het geleidingsvermogen van hydrazine en van daarin opgeloste stoffen.
 $T = 25^{\circ}$. $\kappa_{25} \text{ aq.} = 2.8 \times 10^{-4}$.
Cohn see Lassar-Cohn.
- 394. F. Cojazzi.** Gaz. Chim. Ital. 30, I, 187-188, (1900).
Sull'energia di alcuni acidi ossisolfonici.
- 395. U. Collan.** Zeit. Phys. Chem. 10, 130-140, (1892).
Ein Beitrag zur Kenntnis der Autokatalyse. [Same as 396.]
 $T = 25^{\circ}$.
- 396. U. Collan.** Öfvers. Finska Vet.-Soc. Förhand. 34, 249-262, (1891-
1892).
Ein Beitrag, etc. [Same as 395.]
Meas. U. Collan; see 52, 526, 527, 530, 1838.
- 397. J. N. Collie.** Jour. Chem. Soc. 77, 971-977, (1900). *Meas. J. Walker.*
Dehydracetic acid. [Same as 398.]
- 398. J. N. Collie.** Proc. Chem. Soc. 16, 147, (1900). *Meas. J. Walker.*
Dehydracetic acid. [Same as 397.]
- 399. J. N. Collie, T. P. Hilditch.** Jour. Chem. Soc. 91, 787-789, (1907).
An isomeric change of dehydracetic acid. [Same as 400.]
- 400. J. N. Collie, T. P. Hilditch.** Proc. Chem. Soc. 23, 92, (1907).
An isomeric change of dehydracetic acid. [Same as 399.]
- 401. J. N. Collie, T. Tickle.** Jour. Chem. Soc. 75, 710-717, (1899). *Meas. Kellas.*
The salts of dimethylpyrone, and the quadrivalence of oxygen.
L. H. Cone see M. Gomberg.
- 402. E. J. Constam, J. White.** Am. Chem. Jour. 29, 1-49, (1903).
Physico-chemical investigations in the pyridine series.
 $T = 25^{\circ}$. S. U. $\kappa \text{ aq.} = 0.9-1.5 \times 10^{-6}$; sub.
Meas. H. C. Cooper; see 1341b.
H. C. Cooper see A. A. Noyes, A. C. Melcher.
- 403. N. Coos.** Ber. Deutsch. Chem. Ges. 35, 4109-4112, (1902).
Ueber Selendilactylsäuren.
 $T = 25^{\circ}$. S. U.
- 404. A. Coppadoro.** Gaz. Chim. Ital. 32, I, 537-572, (1902).
Sulla grandezza di affinità degli acidi ossibenzoici alogenati in rapporto alla
loro costituzione.
 $T = 24^{\circ}$. $\kappa \text{ aq.} = 3 \times 10^{-6}$; probably sub.
- 405. V. v. Cordier.** Monatsh. 27, 697-729, (1906).
Ueber einen Fall von wahrscheinlicher Stereoisomerie beim Guanidin. [Same
as 406 and 407.]
 $T = 20^{\circ}$.
- 406. V. v. Cordier.** Sitzber. Akad. Wien. 115, 2b, 497-529, (1906).
Ueber einen Fall, etc. [Same as 405 and 407.]
- 407. V. v. Cordier.** Verh. Ges. Deutsch. Naturf. Aerzte. 76, II, 1, 105-108,
(1904).
Ueber eine wahrscheinliche Stereoisomerie, etc. [Same as 405 and 406.]
W. Cormack see J. Walker.

408. E. Cornec. *Compt. Rend.* 149, 676-678, (1900).
 Étude cryoscopique de la neutralisation de quelques acides.
 T. Costa see R. Nasini.
 H. R. Courtman see J. C. Philip.
Meas. H. Couvert; see 214a.
 Coy = McCoy. q. v.
409. D. C. Crichton. *Jour. Chem. Soc.* 91, 1793-1797, (1907).
 Hydrates of some quaternary bases.
Meas. D. C. Crichton; see 1858, 1879.
410. J. C. Crocker. *Jour. Chem. Soc.* 91, 593-612, (1907).
 The velocity of hydrolysis of aliphatic amides.
 T = 63.2°. R. O. κ aq. = 2.7×10^{-6} .
411. (J. C. Crocker. *Proc. Chem. Soc.* 23, 63, (1907).
 The velocity of hydrolysis of aliphatic amides.) [No data.]
412. J. C. Crocker, F. H. Lowe. *Jour. Chem. Soc.* 91, 952-962, (1907).
 The velocity of hydrolysis of the aliphatic amides by alkali.
 T = 40.06°, 63.2° and 95.9°. R. O.
413. A. W. Crossley, W. H. Perkin, Jr. *Jour. Chem. Soc.* 73, 1-44, (1898).
Meas. T. Ewan.
 Decomposition of camphoric acid by fusion with potash or soda.
 D. Crothers see H. E. Armstrong.
414. A. C. Cumming. *Zeit. Phys. Chem.* 57, 574-599, (1906).
 Die Affinitätskonstanten amphoterer Elektrolyte. II. Methyl derivate der Ortho- und Metaamidbenzoesäure. [Same as 415.]
 T = 25°. κ_{25} aq. not more than 1.5×10^{-6} .
415. A. C. Cumming. *Proc. R. Soc. London. A*, 78, 103-139, (1906).
 The affinity constants of amphoteric electrolytes. II. Methyl derivatives of ortho- and meta-aminobenzoic acids. [Same as 414.]
416. J. A. Cunningham. *Proc. Cambridge Phil. Soc.* 11, 431-433, (1900-1902).
 On an attempt to detect the ionisation of solutions by the action of light and Röntgen rays.
417. P. Curie. *Compt. Rend.* 134, 420-423, (1902).
 Conductibilité des diélectriques liquides sous l'influence des rayons du radium et des rayons de Röntgen.
418. R. S. Curtiss. *Am. Chem. Jour.* 28, 315-326, (1902).
 On an acid derivative of ethyl anilinomalonate.
 T = 19° and 19.5°.
419. T. Curtius, R. Radenhausen. *Jour. Prakt. Chem.* (2), 43, 207-208, (1891). *Meas.* W. Ostwald.
 Zur Kenntniss der Stickstoffwasserstoffsäure.

D.

- L. D'Agostini see G. Carrara.
420. P. Dalle. *Rec. Trav. Chim.* 21, 123-154, (1902).
 Sur le triméthylène-carbinol et ses dérivés. [Same as 421.]
 T = 25°.
421. P. Dalle. *Bul. Acad. Belg.* (1902), 36-79.
 Sur le triméthylène-carbinol, etc. [Same as 420.]
422. W. van Dam. *Zeit. Physiol. Chem.* 58, 295-330, (1908-1909).
 Beitrag zur Kenntnis der Labgerinnung.

- 423.** P. B. DaMonte, A. Zoso. *Gaz. Chim. Ital.* 27, II, 467-475, (1897).
Sulla energia di alcuni acidi solfonici del toluolo e del xilolo.
T = 25°.
- 424.** (H. Danneel. *Zeit. Elektrochem.* 11, 249-252, (1905).
Notiz über Ionengeschwindigkeiten.) [Inorganic.]
H. Davidsohn see L. Michaelis.
Meas. W. B. Davidson; see 731, 735, 775, 1729.
W. B. Davidson see A. Hantzsch.
- 425.** W. B. Davidson, A. Hantzsch. *Ber. Deutsch. Chem. Ges.* 31, 1612-1648, (1898). # *Meas. Kissel.*
Physikochemische Untersuchungen über Diazoniumsalze, Diazoniumhydrat und normale Diazotate.
T = 0°, 1° and 25°.
R. O. E. Davis see C. H. Herty.
- 426.** H. M. Dawson. *Zeit. Phys. Chem.* 69, 110-122, (1909).
On the nature of ammoniacal solutions of cupric hydroxide.
T = 18°.
de; see under the letter beginning the next word, *e. g.*, de Bruyn, see under Bruyn.
- 427.** S. Deakin, M. Scott, B. D. Steele. *Zeit. Phys. Chem.* 69, 123-135, (1909).
On the complex oxalates of cobalt and nickel.
De Blasi see Blasi.
- 428.** G. Dedichen. *Ber. Deutsch. Chem. Ges.* 39, 1831-1856, (1906).
Affinitätsgrößen einiger cyclischer Basen.
[T probably 25°.] R. O.
- 429.** (C. Déguisne. *Ann. Physik.* (3), 52, 604-606, (1894).
Ueber die Frage nach einer Anomalie des Leitvermögens wässeriger Lösungen bei 4°.) [Inorganic.]
- 430.** C. Déguisne. *Dis. Strassburg.* (1895). Abstracted in *Beibl. Ann. Physik.* 20, 996-997, (1896).
Temperaturkoeffizienten des Leitvermögens sehr verdünnter wässeriger Lösungen.
de la; see under the letter beginning the next word, as for de.
- 431.** M. Delépine. *Bul. Soc. Chim.* (4), 3, 643-652, (1908).
Composés sulfurés et azotés dérivés du sulfure de carbone (XII). Thiosulfocarbamates métalliques. [Same as 432.]
- 432.** M. Delépine. *Compt. Rend.* 146, 981-984, (1908).
Propriétés des thiosulfocarbamates métalliques. [Same as 431.]
H. Demierre see P. Dutoit.
- 433.** C. Dempwolff. *Phys. Zeit.* 5, 637-641, (1904).
Ionenwanderung im Methylalkohol als Lösungsmittel.
T = 18°.
- 434.** H. G. Denham. *Jour. Chem. Soc.* 93, 41-63, (1908).
The electrometric determination of the hydrolysis of salts.
T = 25°. κ aq. = $1.2-2.5 \times 10^{-4}$.
- 435.** R. B. Denison, B. D. Steele. *Jour. Chem. Soc.* 89, 999-1013, (1906).
A new method for the measurement of hydrolysis in aqueous solution based on a consideration of the motion of ions. [See correction in 436. k at 25° is given in 437.]
T = 18° and 25°.
- 436.** R. B. Denison, B. D. Steele. *Jour. Chem. Soc.* 89, 1386-1387, (1906).
A new method for the measurement of hydrolysis in aqueous solution based

on a consideration of the motion of ions. A correction. [k at 25° is same as in 435. The correction is for 18°.]

T = 18° and 25°.

437. R. B. Denison, B. D. Steele. Proc. Chem. Soc. 22, 162-163, (1906). A new method, etc. [k at 25° same as 435. No Λ given here.]

438. R. Dennhardt. Ann. Physik. (3), 67, 325-344, (1899).

Ueber Beziehungen zwischen Fluidität und elektrolytischer Leitfähigkeit von Salzlösungen sowie über die Leitfähigkeit von Oelsäure und deren Alkalisalzen in Wasser bez. Alkoholen bei verschiedenen Temperaturen.

T = 0° to 60°. R. O. κ aq. = $1.0-2.2 \times 10^{-6}$; sub.

439. I. H. Derby. Am. Chem. Jour. 39, 437-473, (1908).

Studies in catalysis. IV. The catalysis of imidoesters. [k same as in part of 1856 and 1857.]

T = 18° and 25° $\pm 0.01^\circ$. Hg. U.

Meas. I. H. Derby; see 1857.

I. H. Derby see J. Stieglitz.

D'Errico see Errico.

des; see under the letter beginning next word, as for de.

C. H. Desch see A. Hantzsch.

440. J. Deschauer. Dis. Heidelberg. (1905). Meas. A. Benrath.

Ueber die Kondensation von Aceton mit Bernsteinsäureester.

[Probably R. O.] κ aq. = 6.23×10^{-7} .

441. E. Deussen. Zeit. Anorg. Chem. 44, 300-340, (1905).

Zur Kenntnis der Flusssäure. [Same as 442.]

T = 25°.

442. E. Deussen. Habilit Schr. Leipzig. (1905).

Zur Kenntnis der Flusssäure. [Same as 441.]

443. E. Deussen, G. Heller, O. Nötzel. Ber. Deutsch. Chem. Ges. 40, 1300-1303, (1907).

Leitfähigkeit wässriger Lösungen von N-Isatin-natrium und isatinsaurem Natrium.

T = 25°.

444. A. Devrient. Dis. Leipzig. (1897).

Isomere der Camphoronsäure.

T = 25°.

J. Dewar see J. A. Fleming.

445. J. Dewar, J. A. Fleming. Proc. R. Soc. London. 61, 2-18, (1897).

Note on the dielectric constant of ice and alcohol at very low temperatures.

T = -185°.

445a. C. Dhéré, M. Gorgolewski. Compt. Rend. 150, 934-936, (1910).

Sur la préparation et sur quelques propriétés physicochimiques de la gélatine déminéralisée.

κ aq. = 1.5×10^{-4} .

445b. C. Dhéré, M. Gorgolewski. Compt. Rend. 150, 993-996, (1910).

Sur l'obtention, par dialyse électrique, d'un sérum extrêmement appauvri en électrolytes.

446. (H. C. Dibbits. Zeit. Analyt. Chem. 13, 137-146, (1874).

Ueber die Löslichkeit des schwefelsauren Bleioxydes in Lösungen von essigsaurem Natron.)

H. Diesselhorst see F. Kohlrausch, L. Holborn.

447. O. Dimroth. Ann. Chemie. 335, 1-112, (1904).

Ueber desmotrope Verbindungen. [See 653.]

T = 25° and 50°. R. O.

- 448. O. Dimroth.** Ann. Chemie. 338, 143-182, (1905). (*Meas. H. Stahl?*)
 Ueber desmotrope Verbindungen.
 T = 25°. [Probably R. O., cf. 447.]
- 449. C. Dittrich.** Zeit. Phys. Chem. 29, 449-490, (1899).
 Die Uranylsalze vom physikalisch-chemischen Standpunkte aus betrachtet.
 T = 25°. Hg. U. α aq. = $2-3.2 \times 10^{-6}$; sub.
Meas. C. Dittrich; see 1029, 1673, 1674.
- 450. (H. Ditz.** Chem. Ztg. 25, 1, 109-112, (1901).
 Ueber einige Reactionen des Kobalts und Eisens und den Einfluss der Alkohole
 und anderer organischer Stoffe auf die elektrolytische Dissociation der Salze
 in wässriger Lösung.)
 J. Dodt see J. Tafel.
 F. E. Dollfus see A. Hantzsch.
 ?*Meas.* Dongier; see 1108.
 Dongier see Lesage.
- 451. Dongier, Lesage.** Compt. Rend. 134, 834-835, (1902).
 Valeurs de la résistance électrique, de l'indice de réfraction et du pouvoir ro-
 tatoire de sérums sanguins normaux. [Corrected for typographical errors in
 Compt. Rend. 134, 932.]
 T = 16.7°.
- 452. (F. G. Donnan.** Phil. Mag. (5), 45, 529-532, (1898).
 The Thomson effect in a binary electrolyte.)
- 453. (F. G. Donnan.** Phil. Mag. (6), 3, 305-310, (1902).
 Condensation of the vapours of organic liquids in presence of dust-free
 air.)
 F. G. Donnan. Phil. Mag. 15, 305, is the preceding reference.
- 454. O. Dony-Hénault.** Bul. Acad. Belg. (1909), 342-409.
 Contribution à l'étude méthodique des oxydases.
 T = 25°.
Meas. A. Dorn; quoted in 7.
 Doroschewsky see Doroshevskij.
- 455. A. G. Doroshevskij, M. S. Roždestvenskij.** Jour. Russ. Phys.-chem.
 Soc. 40, 739-740, (1908).
 The electrical conductivity of mixtures of alcohol and water. [A summary
 of 456.]
 T = 15° and 18°. R. O.
- 456. A. G. Doroshevskij, M. S. Roždestvenskij.** Jour. Russ. Phys.-chem.
 Soc. 40, 887-908, (1908).
 The electrical conductivity of mixtures of alcohol and water. [A summary
 is given in 455.]
 T = 15° and 18°. R. O.
- 456a. S. van Dorssen.** Rec. Trav. Chim. 29, 368-393, (1910).
 Contribution à la connaissance des acides nitro- et amidosulfobenzoïques.
 T = 25°. R. O.
- 457. (J. M. Douglas.** Dis. Johns Hopkins. (1901).
 The dissociation of certain acids, bases and salts at different temperatures.)
 [Same as 909.]
 J. M. Douglas see H. C. Jones.
- 458. Dreser.** Zeit. Elektrochem. 10, 656-660, (1904).
 Die Gefrierpunkts- und Leitfähigkeitsbestimmung des Harns in einigen phar-
 makologischen Ergebnissen.
- 459. (K. Drucker.** Zeit. Elektrochem. 13, 81-83, (1907).
 Beweglichkeit von Ionen in Wasser.)

- 460. K. Drucker.** Zeit. Phys. Chem. 49, 563-589, (1904).
Messungen und Berechnungen von Gleichgewichten stark dissoziierter Säuren.
T = 18° ± 0.05°. R. O. κ_{25} aq. = 1.3×10^{-6} ; sub.; also gives data without sub.
- 461. K. Drucker.** Zeit. Phys. Chem. 52, 641-704, (1905).
Studien an wässrigen Lösungen aliphatischer Säuren. [Same as 462.]
T = 0° and 25°. R. O. κ_{25} aq. = 1.7×10^{-6} ; sub.
- 462. K. Drucker.** Habilitatschr. Leipzig. (1905).
Studien an wässrigen, etc. [Same as 461.]
Meas. K. Drucker; see 1979.
K. Drucker see V. Rothmund.
- 463. M. Duboux.** Dis. Lausanne. (1908).
Contribution à l'analyse physico-chimique des vins. [See P. Dutoit, M. Duboux, Compt. Rend. 147, 134 and 351, (1908), for use of this method.]
T = 25°. R. O.
M. Duboux see P. Dutoit.
- 464. J. Duclaux.** Zeit. Chem. Ind. Kolloid. 3, 126-134, (1908).
Die Filtration kolloider Lösungen. [Contains a bibliography of measurements of the electrical conductivity of colloidal solutions to date.]
- 465. A. Dumanski.** Jour. Russ. Phys.-chem. Soc. 39, 1379-1391, (1907).
The electrical conductivity of electrolytes in aqueous solutions of gelatin. [Same as 467 and 468.]
T = 25°.
- 466. A. V. Dumanski.** Jour. Russ. Phys.-chem. Soc. 41, 252-258, (1909).
Mendelejeff number.
Influence of colloids on the electrical conductivity of electrolytes.
- 467. A. Dumanski.** Zeit. Chem. Ind. Kolloid. 2, Suppl. Heft 1, 18-22, (1908).
Ueber die Leitfähigkeit der Elektrolyte in wässrigen Lösungen von Gelatine. [Same as 465 and 468.]
T = 25°.
- 468. A. Dumanski.** Zeit. Phys. Chem. 60, 553-562, (1907).
Ueber die Leitfähigkeit der Elektrolyte in wässrigen Lösungen von Gelatine. [Same as 465 and 467.]
Dumanskij see Dumanski.
Dumansky see Dumanski.
H. Duperthuis see P. Dutoit.
- 469. E. L. Durand.** Dis. Genève. (1902).
Recherches expérimentales sur la solubilité des malonates alcalino-terreux et sur quelques constantes physico-chimiques de leurs solutions.
T = 22° to 40°. R. O. κ aq. sub.
- 470. P. Dutoit.** Jour. Chim. Phys. 1, 617-656, (1903).
Conductibilité, dissociation et propriétés des électrolytes dans les dissolvants autres que l'eau. [Contains a full review of the literature to date.]
- 471. P. Dutoit.** Zeit. Elektrochem. 12, 642-644, (1906). Meas. Ottiker.
Ueber molekulare Leitfähigkeit, Betrag und Gesetze der Dissociation organischer und anorganischer Lösungsmittel.
- 472. P. Dutoit.** Bul. Soc. Vaudoise. Compt. Rend. June (1906), I.
Les conductibilités et les réactions des électrolytes dans les dissociants autre que l'eau.
- 473. P. Dutoit.** Bul. Soc. Vaudoise. Proc. Verb. 41, VI-XI, (1904-1905).
L'acide isosalicylique.

- 474.** P. Dutoit, E. Aston. *Compt. Rend.* 125, 240-243, (1897).
Relation entre la polymérisation des corps liquides et leur pouvoir dissociant sur les électrolytes.
T = 20°.
- 475.** P. Dutoit, H. Demierre. *Jour. Chim. Phys.* 4, 565-575, (1906).
Réactions ioniques dans l'acétone.
T usually 37.5°. S. U.
- 475a.** P. Dutoit, M. Duboux. *Bul. Soc. Vaudoise*, (5), 45, 417-461, (1909).
Quelques résultats de l'analyse physico-chimique des vins.
- 476.** P. Dutoit, M. Duboux. *Bul. Soc. Vaudoise. Compt. Rend.* (1908), IV.
Détermination des bases volatiles du vin.
- 477.** P. Dutoit, M. Duboux. *Bul. Soc. Vaudoise. Proc. Verb.* 45, 43-44, (1908-1909).
Acidité réelle dans les vins.
- 478.** P. Dutoit, H. Duperthuis. *Jour. Chim. Phys.* 6, 699-725, (1908).
Meas. Gagnaux; Ottiker.
Chaleurs de dissociation de quelques électrolytes dans des dissolvants organiques.
T = 0° to 80°. S. U.
- 479.** (P. Dutoit, H. Duperthuis. *Jour. Chim. Phys.* 6, 726-731, (1908).
Viscosités et conductibilités limites.)
- 480.** P. Dutoit, H. Duperthuis. *Bul. Soc. Vaudoise. Compt. Rend.* (1908), I.
Relations qui existent entre les conductibilités limites et la viscosité. [Qualitative.]
T = 0° to 80°.
- 481.** P. Dutoit, H. Duperthuis. *Bul. Soc. Vaudoise. Compt. Rend.* (1908), V.
Conductibilités moléculaires limites. [Qualitative.]
T = 0° to 80°.
- 482.** P. Dutoit, L. Friderich. *Bul. Soc. Chim.* (3), 19, 321-337, (1898).
Sur la conductibilité des électrolytes dans les dissolvants organiques.
T = 0°, 25° and 50°. R. O.
- 483.** P. Dutoit, L. Gagnaux. *Arch. Sci. Phys. Nat.* (4), 23, 213-214, (1907).
Conductibilité de quelques électrolytes binaires dans l'éther acétylacétique, l'alcool isobutylique et l'alcool isoamylique. [Same as **484**.]
- 484.** P. Dutoit, L. Gagnaux. *Bul. Soc. Vaudoise. Compt. Rend.* (1906-1907), III.
Les conductibilités de quelques électrolytes binaires dans l'éther acétylacétique etc. [Same as **483**.]
- 485.** P. Dutoit, E. Gyr. *Jour. Chim. Phys.* 7, 189-203, (1909).
Conductivités électriques de solutions très diluées dans l'anhydride sulfureux. [Same as **704**. Abstracted in **486**.]
T = -15°. R. O.
- 486.** P. Dutoit, E. Gyr. *Bul. Soc. Vaudoise. Compt. Rend.* April, (1906), I-II.
Les conductibilités moléculaires limites dans l'anhydride sulfureux à -5°. [Given in full in **485** and **704**.]
- 487.** P. Dutoit, A. Levier. *Jour. Chim. Phys.* 3, 435-454, (1905). # *Meas. Benz.*
Conductibilités limites de quelques électrolytes binaires dans l'acétone.
T = 18°. S. U.
- 488.** P. Dutoit, Ottiker. *Arch. Sci. Phys. Nat.* (4), 23, 215, (1907).
Dissociation des électrolytes dans l'alcool propylique et la pyridine. [Same as **489**. Qualitative.]

488. P. Dutoit, Ottiker. Bul. Soc. Vaudoise. Compt. Rend. (1906-1907), V.

La dissociation des électrolytes dans l'alcool propylique et la pyridine. [Same as **488.**]

490. P. Dutoit, H. Rappeport. Arch. Sci. Phys. Nat. (4), 24, 417-418, (1907).

Conductibilités limites de quelques sels dans l'alcool éthylique. [Given in **491** and **1470.**]

T = 18°. S. U.

491. P. Dutoit, H. Rappeport. Jour. Chim. Phys. 6, 545-551, (1908).

Conductivités limites de quelques électrolytes dans l'alcool éthylique. [Given in **1470.** Part is same as **490.**]

T = 18°. S. U.

E.

G. W. Eastman see A. A. Noyes, A. C. Melcher, H. C. Cooper.

492. F. P. Ebersbach. Zeit. Phys. Chem. 11, 608-632, (1893).

Ueber die Affinitätsgrößen aromatischer Amidosulfonsäuren.

T = 25°.

Meas. F. P. Ebersbach; see **504.**

O. Ecker see F. Straus.

Effendi see Sald-Effendi.

493. (H. E. Eggers. Jour. Phys. Chem. 8, 14-36, (1904).

On the dielectric constants of solvents and solutions.)

494. R. Ehrenfeld. Zeit. Elektrochem. 9, 335-342, (1903). Meas. W. Storer.

Ueber die Bildung von Wasserstoffionen aus den Methylengruppen der Bernsteinsäure, der Malonsäure und Glutarsäure.

T = 20.3°.

495. R. Ehrenfeld. Zeit. Elektrochem. 10, 3-9, (1904).

Ueber die Veränderung der spezifischen Leitfähigkeit von Salzlösungen durch Alkalilauge.

T = 20.3°.

496. F. H. Eijlman Fils. Rec. Trav. Chim. 25, 83-95, (1906).

Sur la colorimétrie et sur une méthode pour déterminer la constante de dissociation des acides. [Same as **497.**]

497. F. H. Eijlman Jr. Verslag Akad. Amsterdam. 14, 97-107, (1905-1906). Verslag Akad. Amsterdam, English translation, 8, 166-175, (1905-1906).

Over colorimetrie en over een colorimetrische methode om de dissociatie-constante van zuren te bepalen. [Same as **496.**]

498. (G. F. Emery. Proc. R. Soc. London. 55, 356-373, (1894).

Thermo-electric properties of salt solutions.)

499. R. Emrich. Dis. Erlangen. (1902).

Ueber die Einwirkung von Dichloressigsäure auf Anilin. [See **798** for correction. The α - and β - acids here should be interchanged.]

R. O.

Meas. R. Emrich; see **798.**

C. Ende see L. W. Andrews.

500. A. Engler. Ber. Deutsch. Chem. Ges. 33, 2188-2190, (1900).

Antidiazonaphtalinsalze und Naphtylnitrosamin.

T = 0°.

A. Engler see A. Hantzsch, M. Schümann.

- 501. A. Engler, A. Hantzsch.** Ber. Deutsch. Chem. Ges. 33, 2147-2158, (1900).
Diazoniumhydrate und Diazohydrate. [Corrected in 737.]
T = 0°.
- 502. J. E. Enklaar.** Rec. Trav. Chim. 24, 419-443, (1905).
Nouvelles recherches sur l'action des bases sur l'hydrate de chloral.
T = 0.65°. R. O. $\kappa_{0.65}$ aq. = 2.5 and 2.4×10^{-4} ; not sub.
- 503. A. Eppens.** Dis. München. (1892). *Meas. G. Bredig.*
Ueber das Campher-Phoron. [981 gives no numerical data.]
A. Eppens see W. Koenigs.
- 504. H. Erdmann.** Ann. Chemie. 275, 184-309, (1893). *Meas. F. P. Ebersbach.*
Allgemeines über Scheidung und Constitution der isomeren Naphtalinverbindungen.
- 505. (T. Erhard.** Chem. Ztg. 23, I, 283-284, (1899).
Verdünnte Lösungen und elektrolyt. Dissociation.)
- 506. (T. Erhard.** Chem. Ztg. 23, I, 285-287, (1899).
Verdünnte Lösungen und elektrolyt. Dissociation.)
- 507. E. Erlenmeyer.** Ber. Deutsch. Chem. Ges. 42, 2655-2675, (1909).
Meas. K. Bube.
Die Abhängigkeit der Unterschiede bei den Zimtsäuren von dem Ausgangsmaterial.
T = 25.00° ± 0.04°.
O. Erler see H. Ley.
- 507a. G. D'Errico.** Arch. Fisiol. 8, 177-186, (1910).
Influenza dell'inganizione e dell'ingestione di sostanze non elettroliti sulla pressione osmotica e la conduttività elettrica del sangue.
T = 37.2°.
D'Errico see F. Bottazzi.
- 508. (J. A. Erskine.** Ann. Physik. (3), 62, 454-459, (1897).
Ueber das electriche Leitungsvermögen der Electrolyte für sehr schnelle electriche Schwingungen). [Inorganic.]
- 509. A. Esmann.** Dis. Leipzig. (1905).
Zwei stereoisomere Butentricarbonsäuren aus Natriummalonsäureester und den beiden α -Bromcrotonsäureestern.
T = 25°. S. U.
A. Euler see H. Euler.
- 510. H. Euler.** Ber. Deutsch. Chem. Ges. 36, 1854-1860, (1903).
Ueber Silberammoniakbasen und Silbercyanwasserstoffsäure.
T = 18°. R. O.
- 511. H. Euler.** Ber. Deutsch. Chem. Ges. 37, 2768-2773, (1904).
Ueber Complexbildung. II. Pyridincomplexe.
T = 18°.
- 512. H. Euler.** Ber. Deutsch. Chem. Ges. 39, 344-350, (1906).
Die Aldehyde als Säuren.
T = 0° to 18°.
- 513. H. Euler.** Ber. Deutsch. Chem. Ges. 39, 1607-1615, (1906).
Zur Kenntniss der Pseudosäuren. [Same as 521.]
T = 1°, 10° and 18°.
- 514. (H. Euler.** Ber. Deutsch. Chem. Ges. 39, 2265-2269, (1906).
Ueber Pseudosäuren. Antwort auf Hrn. Hantzsch' Kritik.)
- 514a. H. Euler.** Ergebn. Physiol. 9, 241-333, (1910).
Die chemische Dynamik der Enzymreaktionen. [Quotes J. Sjöqvist.]

515. H. Euler. Zeit. Phys. Chem. 21, 257-271, (1896).
Ueber die Abhängigkeit des Dissoziationsgrades einiger Säuren von der Temperatur und über ihre Dissoziationswärme.
 $T = 0^\circ$ to 50° . κ aq. not sub.
516. (H. Euler. Zeit. Phys. Chem. 25, 536-542, (1898).
Ueber die innere Reibung elektrolytischer Lösungen.)
517. H. Euler. Zeit. Phys. Chem. 28, 619-628, (1899).
Ueber den Zusammenhang zwischen der dissociierenden Kraft, der Dielektritätskonstanten und der molekularen Beschaffenheit von Flüssigkeiten. [Qualitative.]
518. (H. Euler. Zeit. Phys. Chem. 29, 603-612, (1899).
Dissoziationsgleichgewicht starker Elektrolyte.) [Inorganic.]
519. H. Euler. Zeit. Physiol. Chem. 51, 213-225, (1907).
Fermentative Spaltung von Dipeptiden. [Part is same as 522 and 523.]
 $T = 18^\circ$ and 25° .
520. H. Euler. Arkiv Kemi. 1, 77-91, (1903-1904).
Ueber Ammoniak und Metallammoniakbasen I. [Inorganic.]
521. H. Euler. Arkiv Kemi. 2, no. 22, 1-13, (1905-1907).
Zur Kenntnis der Pseudosäuren. (Same as 513.)
522. H. Euler. Arkiv Kemi. 2, no. 31, 1-10, (1905-1907).
Fermentative Spaltung von Dipeptiden. [Part is same as 519.]
 $T = 18^\circ$ and 25° .
523. H. Euler. Arkiv Kemi. 2, no. 39, 1-13, (1905-1907).
Zur Kenntnis der alkalischen Verdauung. [Part is same as 519.]
 $T = 18^\circ$ and 37° .
524. H. Euler, I. Bolin. Zeit. Phys. Chem. 66, 71-77, (1909). # *Meas. H. Lundén*.
Ueber die Dissoziationskonstanten der Dioxybenzole.
 $T = 0^\circ$ and 18° . κ_{18} aq. $= 1.6 \times 10^{-4}$; sub.
525. H. Euler, I. Bolin. Zeit. Phys. Chem. 69, 187-202, (1909).
Ueber die chemische Zusammensetzung und die biologische Rolle einer Oxydase.
 $T = 17^\circ$. $\kappa_{17.5}$ aq. $= 1.8 \times 10^{-4}$.
526. H. Euler, A. Euler. Ber. Deutsch. Chem. Ges. 36, 4246-4253, (1903).
Ueber die Einwirkung von Amylnitrit auf β -Aminocrotonsäureester.
527. H. Euler, A. Euler. Ber. Deutsch. Chem. Ges. 36, 4253-4256, (1903).
Ueber die Bildung hydrirter Osotriazole. [See 530 for full measurement. Only k is given here, no Λ .]
528. H. Euler, A. Euler. Ber. Deutsch. Chem. Ges. 38, 2551-2560, (1905).
Zur Kenntniss des Formaldehyds und Formiatbildung. [See 529 and 53.]
 $T = 0^\circ$.
529. H. Euler, A. Euler. Ber. Deutsch. Chem. Ges. 39, 36-39, (1906).
Nachtrag zu unserer Mittheilung über Formaldehyd und Formiatbildung.
530. H. Euler, A. Euler. Arkiv Kemi. 1, 111-126, (1903-1904).
Ueber die Bildung von aliphatischen Isonitrosoverbindungen und Osotriazolen aus β -Amino-Crotonsäureester. [527 gives k without tables of Λ .]
 $T = 18^\circ$ and 21.5° .
531. H. Euler, A. Hantzsch. Ber. Deutsch. Chem. Ges. 34, 4166-4169, (1901).
Ueber ein festes Diazoniumcyanid und über Diazojodide.
 $T = 18^\circ$.

- 532.** H. Euler, B. af Uggla. Zeit. Phys. Chem. 68, 498-510, (1909).
Hydrolyse und Reaktionsgeschwindigkeit in wässrig-alkoholische Lösungen.
[Same as 533.]
T = -50° to +30°.
- 533.** H. Euler, B. af Uggla. Arkiv Kemi. 3, no. 21, 1-14, (1908-1910).
Hydrolyse, etc. [Same as 532.]
- 534.** P. Eversheim. Ann. Physik. (4), 8, 539-567, (1902).
Bestimmung der Leitfähigkeit und Dielektrizitätsconstanten von Lösungsmitteln und deren Lösungen in ihrer Abhängigkeit von der Temperatur bis über den kritischen Punkt. [Same as 537.]
T = 20° to 196°.
- 535.** P. Eversheim. Ann. Physik. (4), 13, 492-511, (1904).
Verhalten von Leitfähigkeit und Dielektrizitätsconstanten einiger Substanzen vor und in dem kritischen Zustand.
- 536.** P. Eversheim. Phys. Zeit. 4, 503-507, (1902-1903).
Leitfähigkeit und Dielektrizitätskonstante von Lösungen und Lösungsmittel im kritischen Zustande.
- 537.** P. Eversheim. Dis. Bonn. (1902).
Bestimmung der Leitfähigkeit, etc. [Same as 534.]
E. Évieux see L. Vignon.
- 538.** T. Ewan. Jour. Chem. Soc. 69, 96-97, (1896).
Note on the electrolytic conductivity of formanilide and thioformanilide.
T = 25°. S. U.
- 539.** (T. Ewan. Proc. Chem. Soc. 12, 8, (1896).
Note on the electrolytic conductivity of formanilide and thioformanilide.)
[Qualitative.]
- 540.** T. Ewan. Proc. R. Soc. London. 57, 117-161, (1894-1895). *Meas. van't Hoff.*
On the absorption spectra of dilute solutions.
T = 14.1°.
- Meas.* T. Ewan; see 413, 1411.
Eydmann see Eijdmann.
- 541.** J. F. Eykman. Ber. Deutsch. Chem. Ges. 24, 1278-1303, (1891).
Ueber die Shikimisäure.
T = 9° to 19°.
Meas. J. F. Eykman; see 838.

F.

- 542.** I. Fanjung. Zeit. Phys. Chem. 14, 673-700, (1894).
Ueber den Einfluss des Druckes auf die Leitfähigkeit von Elektrolyten.
T = 14° to 19°. \propto aq. sub. for salts.
- 543.** G. Farkas. Arch. Gesamt. Physiol. 98, 551-576, (1903).
Ueber die Concentration der Hydroxylionen in Blutserum.
T = 19° to 22°.
- 544.** G. Farkas, E. Scpiades. Arch. Gesamt. Physiol. 98, 577-587, (1903).
Ueber die molekularen Concentrationsverhältnisse des Blutserums der Schwangeren, Kreissenden und Wöchnerinnen und des Fruchtwassers.
T = 18°. R. O.
- 545.** R. C. Farmer. Jour. Chem. Soc. 79, 863-870, (1901).
A new method for the determination of hydrolytic dissociation.
T = 25°.
R. C. Farmer see P. F. Frankland.

- 546. R. C. Farmer, A. Hantzsch.** Ber. Deutsch. Chem. Ges. 32, 3089-3101, (1899).
Die Constitution der sogen. Oxyazokörper.
T = 25°.
- 547. R. C. Farmer, A. Hantzsch.** Ber. Deutsch. Chem. Ges. 32, 3101-3109, (1899).
α-Oximidoketone und Chinonoxime als Pseudosäuren.
T = 25°.
- 548. R. C. Farmer, F. J. Warth.** Jour. Chem. Soc. 85, 1713-1726, (1904).
The affinity constants of aniline and its derivatives.
T = 6° and 25°.
- 549. (R. C. Farmer, F. J. Warth.** Proc. Chem. Soc. 20, 244, (1904).
The affinity constants of aniline and its derivatives.) [Only comparative. No data.]
- 550. F. Fassbender. (A. Werner.)** Zeit. Anorg. Chem. 15, 123-142, (1897).
Beitrag zur Konstitution anorganischer Verbindungen. VIII. Mitteilung.
Ueber die Anderson'sche Reaction. [Same as 551.]
- 551. F. Fassbender.** Dis. Zürich. (1896).
Untersuchungen über die Anderson'sche Reaction und über die isomeren Platosoxalsäuren. [Same as 550.]
- 552. C. E. Fawsitt.** Zeit. Phys. Chem. 41, 601-629, (1902).
Die Zersetzung des Harnstoffs. [Same as 555.]
T = 99.2° for part. R. O. \times aq. = $1.8-2.1 \times 10^{-6}$; sub.
- 553. C. E. Fawsitt.** Zeit. Phys. Chem. 43, 585-592, (1904).
Physikalisch-chemische Untersuchungen in der Amidgruppe. [Same as 554.]
T = 25° and 34.2°.
- 554. C. E. Fawsitt.** Proc. R. Soc. Edinburgh. 25, I, 51-60, (1903-1905).
Physico-chemical investigations in the amide group. [Same as 553.]
- 555. C. E. Fawsitt.** Dis. Leipzig. (1902).
Die Zersetzung des Harnstoffs. [Same as 552.]
- 556. A. Fedorov.** Jour. Russ. Phys.-chem. Soc. 35, 651-652, (1903). Abstracted in Beibl. Ann. Physik. 28, 969, (1904).
Electrical conductivity of solutions of oxalic acid in the presence of neutral salts.
- 557. F. Feist.** Ann. Chemie. 257, 253-297, (1890). *Meas. G. Magnanini.*
Ueber Dehydracetsäure.
- 558. F. Feist.** Ber. Deutsch. Chem. Ges. 25, 315-335, (1892). *Meas. Barth.*
Ueber neue Synthesen mittelst Dehydracetsäure.
- 559. F. Feist.** Ber. Deutsch. Chem. Ges. 26, 747-764, (1893). *Meas. A. Miolati.*
Ueber den Abbau des Cumalinringes.
- 560. (B. Fels.** Zeit. Elektrochem. 10, 208-214, (1904).
Studien über die Indikatoren der Acidimetrie und Alkalimetrie.)
- 561. (H. J. H. Fenton, H. O. Jones.** Jour. Chem. Soc. 79, 91-101, (1901).
Relationships of oxalacetic acid.) [Qualitative. Same as 562. See correction in 925 and 927.]
- 562. (H. J. H. Fenton, H. O. Jones.** Proc. Chem. Soc. 16, 205, (1900).
Relationships of oxalacetic acid.) [Same as 561.]
- 563. (H. J. H. Fenton, H. O. Jones.** Proc. Chem. Soc. 17, 24-26, (1901).
Note on a method for comparing the affinity values of acids.) [Continuation of 562. See also 925 and 927.]
- 564. F. Fichter.** Verhand. Naturf. Ges. Basel. 16, 245-298, (1903).
Ueber ungesättigte Säuren. [A summary of 565, 568 and 571.]

- 564a. F. Fichter.** Arch. Sci. Phys. Nat. (4), 27, 409-410, (1909).
Constantes d'affinité des acides bibasiques non saturés. [Given with tables of Λ in 571a.]
- 565. F. Fichter, A. Beisswenger.** Ber. Deutsch. Chem. Ges. 36, 1200-1205, (1903).
Die Reduction des Glutarsäureanhydrids zum δ -Valerolacton.
T = 25°. R. O.
- 566. F. Fichter, E. Gisiger.** Ber. Deutsch. Chem. Ges. 42, 4707-4710, (1909).
Ueber β -Methyl-pentensäuren. [Same as 642 for acids. k is given in 569. No salts are given here.]
T = 25°. R. O. κ_{25} aq. = 3.5×10^{-4} .
- 567. F. Fichter, W. Latzko.** Jour. Prakt. Chem. (2), 74, 327-332, (1906).
Studien an ungesättigten Säuren. Div. VII. Ueber Diphenylvinylelessigsäure. [Latzko's name appears only under Div. VII. See 1058 for full tables of Λ and k . Only k is given here.]
T = 25°.
- 568. F. Fichter, B. Mühlhauser.** Ber. Deutsch. Chem. Ges. 35, 341, (1902).
Messungen an der α -Aethylidenglutarsäure. [Same as 1291 for k ; no tables of Λ are given here.]
T = 25°. R. O.; also S. U. for sodium salt.
- 569. F. Fichter, H. Müller.** Ann. Chemie. 348, 256-259, (1906). *Meas. E. Gisiger, and H. Obladen.*
Affinitätsmessungen an einbasischen ungesättigten Fettsäuren. [For tables of Λ and k see 566 and 570. Same as 1292.]
T = 25°. R. O. κ_{25} aq. = 3.5×10^{-4} .
- 570. F. Fichter, H. Obladen.** Ber. Deutsch. Chem. Ges. 42, 4703-4707, (1909).
Ueber α -Aethyl-pentensäuren und über Xeronsäureanhydrid. [Same as 1347. Only k is given in 569.]
T = 25°. R. O. κ aq. = 3.5×10^{-4} .
- 571. F. Fichter, A. Pfister.** Ann. Chemie. 334, 201-210, (1904). *# Meas. E. Füeg and E. Rudin.*
Leitfähigkeitsmessungen an ungesättigten Säuren. [Part is same as 622.]
T = 25°. R. O.
- 571a. F. Fichter, H. Probst.** Ann. Chemie. 372, 69-79, (1910).
Leitfähigkeitsmessungen an zweibasischen, ungesättigten structurisomeren Säuren. [k only, is given in 564a.]
T = 25°.
- 572. F. Fichter, J. Schwab.** Ann. Chemie. 348, 251-256, (1906).
Ueber β -Methylglutaconsäuren. [Same as 1603.]
T = 25°. R. O. κ aq. = 3×10^{-4} .
- 573. F. Fichter, F. Sonneborn.** Ber. Deutsch. Chem. Ges. 35, 938-943, (1902).
Ueber Vinyllessigsäure. [Given with full tables of Λ in 1640.]
T = 25°. R. O.
D. Filippi see R. Luzzatto.
- 574. A. Findlay, W. E. S. Turner, G. E. Owen.** Jour. Chem. Soc. 95, 938-942, (1909).
Affinity constants of hydroxy- and alkyloxy-acids. [k , but no Λ , is given in 575.]
T = 25°.

- 575. A. Findlay, W. E. S. Turner, G. E. Owen.** Proc. Chem. Soc. 25, 146, (1909).
The affinity constants of hydroxy- and alkyloxy- acids. [Given in 574.]
T = 25°.
- 576. (J. Fink.** Ann. Physik. (3), 26, 481-517, (1885).
Ueber den Einfluss des Druckes auf den electrischen Leitungswiderstand von Electrolyten.) [Inorganic.]
- 577. C. Fiorini.** Gaz. Chim. Ital. 31, I, 33-39, (1901).
Sugli spettri di assorbimento degli acidi cloranilico, bromanilico e dei loro sali alcalini. [Quoted in 389.]
- 578. W. M. Fischer.** Zeit. Phys. Chem. 65, 61-69, (1908-1909).
Ueber die Kinetik der Bildung und Verseifung von Salpetrigsäureestern.
Meas. W. Fischer; see 754.
- 579. R. Fittig.** Ann. Chemie. 330, 292-361, (1904). *Meas.* P. Jehl.
Ueber Umlagerungen bei den ungesättigten Säure. [Same as 885.]
T = 20°. R. O.
- 580. T. C. Fitzpatrick.** Phil. Mag. (5), 24, 377-391, (1887).
On the action of the solvent in electrolytic conduction.
T varies; usually 15° to 18°. U = legal ohm.
Meas. Flaschner; see 1246, 1247.
J. A. Fleming see J. Dewar.
- 581. J. A. Fleming, J. Dewar.** Proc. R. Soc. London. 61, 299-316, (1897).
On the dielectric constants of certain frozen electrolytes at and above the temperature of liquid air.
- 582. J. A. Fleming, J. Dewar.** Proc. R. Soc. London. 61, 316-330, (1897).
On the dielectric constants of pure ice, glycerine, nitrobenzol and ethylene dibromide at and above the temperature of liquid air.
- 583. B. Flürscheim.** Jour. Chem. Soc. 95, 718-734, (1909).
The relation between the strength of acids and bases and the quantitative distribution of affinity in the molecule.
T = 17° and 25°.
- 584. B. Flürscheim.** Jour. Chem. Soc. 97, 84-97, (1910).
The relation between the strengths of acids and bases, and the quantitative distribution of affinity in the molecule. [m-Toluidine is given qualitatively in 586.]
T = 25°. $K_w = 1.18 \times 10^{-14}$.
- 585. (B. Flürscheim.** Proc. Chem. Soc. 25, 22-23, (1909).
The relation between the strength of acids and bases and the quantitative distribution of affinity in the molecule.)
- 586. B. Flürscheim.** Proc. Chem. Soc. 25, 193-194, (1909).
The relation between, etc. [Given in 584.]
- 587. C. Foà.** Arch. Fisiol. 3, 369-415, (1906).
La reazione dei liquidi dell'organismo determinata col metodo elettrometrico (pile di concentrazione).
- 588. A. Fock.** Zeit. Ver. Rübenzuck. Ind. (1889), 710. Abstracted in Zeit. Analyt. Chem. 29, 35-56, (1890).
Die Anwendung des elektrischen Leistungsvermögens zu quantitative Bestimmung.
T = 25°. S. U. $\kappa_{aq.} = 6.37 \times 10^{-4}$.
Meas. Foote; see 1661, 1664.
- 589. (H. W. Foote, N. A. Martin.** Am. Chem. Jour. 41, 453-457, (1909).
On the molecular condition of salts dissolved in a fused salt. II. The electrical conductivity of salts in fused mercuric chloride.)

- 590. J. S. Ford, J. M. Guthrie.** Jour. Chem. Soc. 89, 76-92, (1906).
The influence of certain amphoteric electrolytes on amylolytic action.
T = 25°. R. O. κ aq. = $1-1.5 \times 10^{-6}$; not sub.; given only for one measurement.
P. v. d. Forst see H. Grossmann.
- 591. W. Foster.** Phys. Rev. 8, 257-281, (1899).
The conductivity and dissociation of some electrolytes.
T = 18°. S. U. and R. O. κ_{18} aq. is about 1×10^{-6} .
- 592. E. Fouard.** Bul. Soc. Chim. (4), 3, 836-840, (1908).
Sur les propriétés colloïdales de l'amidon. [Given in 595.]
- 593. E. Fouard.** Bul. Soc. Chim. (4), 5, 828-834, (1909).
La solubilisation de l'amidon colloïdal sous l'action des alcalis.
T = 30°.
- 594. E. Fouard.** Compt. Rend. 144, 1366-1368, (1907).
Sur les propriétés colloïdales de l'amidon.
- 595. E. Fouard.** Compt. Rend. 146, 978-981, (1908).
Sur les propriétés de l'amidon en rapport avec sa forme colloïdale. [Gives more details of measurements than 592.]
T = 25°. κ aq. = 2.785×10^{-6} .
- 596. (G. Fousereau.** Ann. Chim. Phys. (6), 15, 533-544, (1888).
Sur la décomposition des hyposulfites par les acides. [Inorganic.]
- 597. G. Fousereau.** Jour. Phys. (2), 4, 450-456, (1885).
Sur la résistance électrique de l'alcool.
T = 15°.
- 598. (W. Fraenkel.** Zeit. Phys. Chem. 60, 202-236, (1907).
Zur chemischen Kinetik des Diazoessigester.)
W. Fraenkel see G. Bredig.
- 599. L. Francesconi, A. Milesi.** Gaz. Chim. Ital. 32, I, 425-436, (1902).
Sulla formazione della cetossima.
[T apparently is 11°.]
- Meas. E. Francillon; see 1401.**
- 600. R. T. Frank.** Am. Jour. Physiol. 14, 466-468, (1905).
A note on the electric conductivity of blood during coagulation.
- 601. E. Franke.** Zeit. Phys. Chem. 16, 463-492, (1895).
Beiträge zur elektrischen Leitfähigkeit von Salzen und Säuren in wässriger Lösung.
T = 25°. Hg. U. κ aq. = $2-3 \times 10^{-6}$; sub.
Meas. E. Franke; see 1212.
- 602. P. F. Frankland, R. C. Farmer.** Jour. Chem. Soc. 79, 1356-1373, (1901).
Liquid nitrogen peroxide as a solvent.
T = 0°.
- 603. (P. F. Frankland, R. C. Farmer.** Proc. Chem. Soc. 17, 201, (1901).
Liquid nitrogen peroxide as a solvent. [Qualitative.]
- 604. E. C. Franklin.** Zeit. Phys. Chem. 69, 272-303, (1909).
The electrical conductivity of liquid ammonia solutions. III.
T = -44° to -33°. R. O.
- 605. E. C. Franklin, H. D. Gibbs.** Jour. Am. Chem. Soc. 29, 1389-1396, (1907).
The electrical conductivity of methylamine solutions.
[T is probably 20.3°.] R. O.
- 606. E. C. Franklin, C. A. Kraus.** Am. Chem. Jour. 20, 820-836, (1898).
Liquid ammonia as a solvent. [Qualitative.]

- 607. E. C. Franklin, C. A. Kraus.** Am. Chem. Jour. 23, 277-313, (1900).
The electrical conductivity of liquid ammonia solutions. [The measurements are given in abridged form in **612.**]
T = -38°. R. O.
- 608.** The reference under this number has been omitted intentionally.
- 609. E. C. Franklin, C. A. Kraus.** Am. Chem. Jour. 24, 83-93, (1900).
The conductivity temperature coefficient of some liquid ammonia solutions.
T = 23° to 363°.
- 610. E. C. Franklin, C. A. Kraus.** Jour. Am. Chem. Soc. 27, 191-222, (1905).
The electrical conductivity of liquid ammonia solutions.
T = -33°. R. O.
- 611. (E. C. Franklin, C. A. Kraus.** Proc. Am. Ass. Advanc. Sci. 47, 215-217, (1898).
Some properties of liquid ammonia.) [An abstract. No data.]
- 612. E. C. Franklin, C. A. Kraus.** Proc. Am. Ass. Advanc. Sci. 48, 157-159, (1899).
The electrical conductivity, etc. [Given in **607.**]
- 613. (W. S. Franklin, L. A. Freudenberger.** Phys. Rev. 25, 294-302, (1907).
Measurement of electrolytic resistance.) [Inorganic.]
- 614. J. C. W. Frazer.** Am. Chem. Jour. 30, 309-323, (1903).
On relations between the color and the composition and constitution of the alkali salts of the nitrophenols. [Same as **615.**]
T = 25°.
- 615. J. C. W. Frazer.** Dis. Johns Hopkins. (1901).
On the relations between, etc. [Same as **614.**]
- 616. (C. Fredenhagen.** Ann. Physik. (4), 17, 285-331, (1905).
Entwurf einer allgemeinen Theorie elektrolytischer Lösungskonstanten und Spannungsreihen, sowie der Löslichkeit und Dissoziation von Säuren und Basen.)
- 617. P. C. Freer, A. M. Clover.** Am. Chem. Jour. 25, 390-413, (1901).
On the constituents of Jamaica dogwood.
T = 25°.
- 617a. W. Frei.** Zeit. Chem. Ind. Kolloide. 6, 94-103, (1910).
Ueber Leitungshemmung durch Kolloide nebst Bemerkungen zum Serumleitvermögen.
T = 35°.
- L. A. Freudenberger see W. S. Franklin.
L. Friderich see P. Dutoit.
- 618. (H. Friedenthal.** Zeit. Elektrochem. 10, 113-119, (1904).
Die Bestimmung der Reaktion einer Flüssigkeit mit Hilfe von Indikatoren.) [Quoted.]
H. Friedenthal see A. Auerbach.
" " see E. Salm.
- 619. J. Friedländer.** Zeit. Phys. Chem. 38, 385-440, (1901).
Ueber merkwürdige Erscheinungen in der Umgebung des kritischen Punktes teilweise mischbarer Flüssigkeiten. [Same as **620.**]
T = 17° to 43°. R. O.
- 620. J. Friedländer.** Dis. Leipzig. (1901).
Ueber merkwürdige Erscheinungen etc. [Same as **619.**]
- 621. A. Fuchs.** Verh. Ges. Deutsch. Naturf. Aerzte. 76, II, 2, 292, (1904).
Untersuchungen des Liquor cerebrospinalis, mit spezieller Berücksichtigung der Chemie desselben.
Meas. E. Füeg; see **571.**

622. G. Füeg. Dis. Basel. (1904).

I. Ueber 1-Phenyl-3-methyl-5-pyrazolidon-3-carbonsäure.

II. Ueber α -Methyl- $\gamma\delta$ -pentensäure. [This is the same Füeg as in 571, and the same measurement.]

T = 25°.

G.

Meas. L. Gagnaux; see 478.

L. Gagnaux see P. Dutoit.

Meas. R. D. Gale; see 1338.

622a. G. Galeotti. Arch. Fisiol. 7, 413-420, (1909).

Sui fenomeni elettrici della mucosa stomacale della rana.

T = 12° to 14°.

623. G. Galeotti. Zeit. Biol. 43, 289-340, (1902).

Ueber die elektrische Leitfähigkeit der tierischen Gewebe.

T = 12° to 38°.

624. G. Galeotti. Zeit. Biol. 45, 65-78, (1904).

Neue Untersuchungen über die elektrische Leitfähigkeit und den osmotischen Druck der tierischen Gewebe.

T = 18°.

625. A. Gamgee. Chem. News. 85, 145-147, (1902).

On certain chemical and physical properties of haemoglobin. [Same as 626.]

T = 0° to 39°. R. O. κ aq. not over 2.5×10^{-6} .

626. A. Gamgee. Proc. R. Soc. London. 70, 79-83, (1902).

On certain chemical, etc. [Same as 625.]

626a. E. Gardella. Arch. Fisiol. 8, 408-420, (1910).

Le costanti fisico-chimiche del siero di sangue di cane dopo l'ablazione dell'apparato tiro-paratiroideo.

T = 25°.

627. (J. A. Gardiner. Proc. Trans. R. Soc. Canada. (3), 2, Sect. III, 37-52, (1908).

On the conductivity of mixtures of dilute solutions.) [Inorganic.]

628. (D. D. Gardner, D. G. Gerassimoff. Jour. Russ. Phys.-chem. Soc. 36, 605, (1904).

On the determination of the solubility of salts of weak acids by the measurement of the electrical conductivity.) [An abstract of 629 and 630.]

629. (D. D. Gardner, D. G. Gerassimoff. Jour. Russ. Phys.-chem. Soc. 36, 746-753, (1904).

On the determination of the solubility of salts of weak acids by the measurement of the electrical conductivity.) [Same as 630. Inorganic.]

630. (D. D. Gardner, D. Gerassimoff. Zeit. Phys. Chem. 48, 359-364, (1904).

Ueber die Bestimmung der Löslichkeit von Salzen schwacher Säuren durch Messung der Leitfähigkeit.) [Same as 629.]

631. F. Garelli. Rend. Soc. Chim. Roma. 1, 74-80, (1903).

Dissociazione elettrolitica in soluzioni acquose e in solventi organici ed inorganici.

632. (A. E. Garrett. Proc. Phys. Soc. London. 20, 584-606, (1905-1907).

Electrical conductivity produced by heating salts.) [Inorganic.]

633. (A. E. Garrett, R. S. Willows. Phil. Mag. (6), 8, 437-454, (1904).

Chemical dissociation and electrical conductivity.) [Same as 634. Inorganic.]

634. (A. E. Garrett, R. S. Willows. Proc. Phys. Soc. London. 19, 325-342, (1903-1905).
Chemical dissociation, etc.) [Same as 633].
V. Garuti see L. Pelet.
Garzón see Carmona.
- 634a. W. W. H. Gee, F. Brotherton. Mem. Proc. Manchester Lit. Phil. Soc. 54, Mem. 13, (1909-1910).
The electrical resistance of the human body.
- 634b. (W. W. H. Gee, W. Harrison. Trans. Faraday Soc. 6, 42-62, (1910).
The electrical theory of dyeing.)
A. Generosow see N. Zelinsky.
Gerasimov see Gerassimoff.
D. G. Gerassimoff see D. D. Gardner.
635. D. Gerlowski, A. Hantzsch. Ber. Deutsch. Chem. Ges. 29, 743-755, (1896).
Weiteres über die stereoisomeren Salze aus Diazosulfanilsäure.
 $T=0^{\circ}$.
636. P. Gerlinger. Ber. Deutsch. Chem. Ges. 37, 3958-3963, (1904).
Zur Umlagerung echter Farbbasen in Carbinolbasen und echter Farbstoff-cyanide in Leukocyanide. [Correction of 770.]
F. H. Getman see H. C. Jones.
637. H. D. Gibbs. Jour. Am. Chem. Soc. 28, 1395-1422, (1906).
Liquid methylamine as a solvent, and a study of its chemical reactivity. [Qualitative.]
H. D. Gibbs see E. C. Franklin.
638. (J. Gibson. Proc. R. Soc. Edinburgh. 26, 234-237, (1905-1906).
Preliminary note on the conductivity of concentrated aqueous solutions of electrolytes.)
639. (J. Gibson. Trans. R. Soc. Edinburgh. 45, 241-259, (1905-1907).
On the relationship between concentration and electrolytic conductivity in concentrated aqueous solutions.) [Quoted.]
640. A. Gillaov. Jour. Russ. Phys.-chem. Soc. 28, 501-509, (1896).
Synthesis of tertiary trimethylethylene lactic acid.
 $T=25^{\circ}$.
641. Gin, Leloux. Compt. Rend. 120, 917-920, (1895).
Sur la résistance électrique des liquides sucrés.
O. Girard see H. Goldschmidt.
642. E. Gisiger. Dis. Basel. (1905).
Ueber β -Methyl- $\beta\gamma$ -pentensäure und β -Methyl- $\alpha\beta$ -pentensäure. II. Ueber Tolilsäure. [Same as 566 for acids, but sodium salt is also given here. Same as part of 569 for k, but also gives A.]
 $T=25^{\circ}$. R. O. $\kappa_{25} \text{ aq.} = 3.5 \times 10^{-6}$.
Meas. E. Gisiger; see 569.
E. Gisiger see F. Fichter.
643. E. Glimm. Dis. Freiburg. (1902).
Ueber die Constitution Formaldehydschwefligsaurer Salze. II. Ueber die Affinitätsgrösse aromatischer Oxyaldehyde. [The values for the hydroxy-aldehydes are probably too high. Cf. 1397c.]
 $T=25^{\circ}$. $\kappa \text{ aq. sub.}$
A. Glogau see R. Wegscheider.

- 644. W. H. Glover.** Dis. Leipzig. (1905).
 Ueber die Körperfarbe von Chinon- und Ketonderivaten sowie von Oxyazokörpern. [Same as 758.]
Meas. W. H. Glover; see 758.
 W. H. Glover see A. Hantzsch.
- 645. R. Gnehm, T. Scheutz.** Jour. Prakt. Chem. (2), 63, 405-427, (1901).
 Ueber alkylirte Amidobenzolsulfosäuren und Metamidophenole. [Same as 1585.]
- 646. T. Gnesotto.** Atti Ist. Veneto. 59, II, 987-1006, (1899-1900).
 Considerazioni e ricerche intorno alla anomalia della resistenza elettrica delle soluzioni acquose in prossimità dei 4°.
 $T = 0.16^\circ$ to 7.43° .
- 647. T. Godlewski.** Jour. Chim. Phys. 3, 393-434, (1905).
 Sur la dissociation des électrolytes dans les solutions alcooliques. [Same as 648.]
 $T = 18^\circ \pm 0.1^\circ$. R. O. α of alcohol not sub. except for acetic acid.
- 648. T. Godlewski.** Bul. Acad. Cracov. (1904), 239-276.
 Sur la dissociation des électrolytes dans les solutions alcooliques. [Same as 647. Abstracted in Zeit. Phys. Chem. 51, 751, and Zeit. Elektrochem. 11, 121.]
- 648a. (J. B. Goebel.** Zeit. Phys. Chem. 71, 652-666, (1910).
 Ueber einige Beziehungen zwischen den Gefrierpunkterniedrigungen, Ionenkonzentrationen und Leitfähigkeiten der Elektrolyte.)
 A. Görtz see E. Lellmann.
 E. G. Goldberg see A. W. Speranskij.
- 649. F. Goldschmidt.** Phys. Zeit. 1, 287-289, (1899-1900).
 Ueber das Leitvermögen wässriger Ammoniaklösungen.
- 650. F. Goldschmidt.** Zeit. Anorg. Chem. 28, 97-139, (1901).
 Physikalisch-chemische Studien an wässrigen Ammoniaklösungen. [Same as 652.]
 $T = 25^\circ \pm 0.05^\circ$. α aq. $= 3.5 \times 10^{-6}$; not sub.
- 651. (F. Goldschmidt.** Zeit. Elektrochem. 10, 221-222, (1904).
 Zur Theorie der Verseifung.)
- 652. F. Goldschmidt.** Dis. Breslau. (1901).
 Physikalisch-chemische Studien, etc. [Same as 650.]
- 653. (H. Goldschmidt.** Zeit. Elektrochem. 11, 5-7, (1905).
 Ueber Desmotrope Verbindungen.) [An analysis of 447.]
- 654. H. Goldschmidt.** Zeit. Elektrochem. 15, 5-10, (1909). *Meas. Udby.*
 Untersuchungen über Esterbildung.
 $T = 25^\circ$.
- 655. H. Goldschmidt.** Zeit. Phys. Chem. 17, 145-163, (1895).
 Die molekulare Löslichkeitserhöhung.
 $T = 23.7^\circ$ to 50.1° .
- 656. H. Goldschmidt.** Zeit. Phys. Chem. 25, 91-99, (1898). *Meas. G. v. Maarseveen.*
 Ueber die Beziehung zwischen Lösungswärme, Löslichkeit und Dissoziationsgrad. [Same as 1161.]
 $T = 25^\circ$.
- 656a. H. Goldschmidt.** Zeit. Phys. Chem. 70, 627-643, (1910).
 Ueber Esterbildung mit schwachen Säuren als Katalysatoren.
 $T = 25^\circ$.
- 657. H. Goldschmidt, E. Bürkle.** Ber. Deutsch. Chem. Ges. 32, 355-378, (1899). *Meas. W. Bernays.*
 Dynamische Untersuchungen über die Bildung der Azofarbstoffe.

- 658.** (H. Goldschmidt, O. Girard. Ber. Deutsch. Chem. Ges. 29, 1224-1242, (1896).
Kryoskopische Versuche mit Phenolsalzen.)
- 659.** H. Goldschmidt, K. Ingebrechtsen. Zeit. Phys. Chem. 48, 435-466, (1904).
Ueber die Reduktion von Nitrokörpern durch Zinnhalogenüre.
- 660.** H. Goldschmidt, H. Keller. Ber. Deutsch. Chem. Ges. 35, 3534-3549, (1902). # *Meas. M. Münder.*
Dynamische Untersuchungen über die Bildung der Azofarbstoffe. [Part is given in **957**; part in **1293**.]
- 660a.** H. Goldschmidt, H. Larsen. Zeit. Phys. Chem. 71, 437-512, (1910).
Die Reduktion der Nitrogruppe durch Schwefelwasserstoff. Ein Beitrag zur Kenntniss der Katalyse.
T = 25°.
- 661.** H. Goldschmidt, L. Oslan. Ber. Deutsch. Chem. Ges. 32, 3390-3399, (1899).
Zur Kenntniss des Acetessigesters. [Same as **1356** for 25°.]
T = 25°.
- 662.** H. Goldschmidt, L. Oslan. Ber. Deutsch. Chem. Ges. 33, 1140-1152, (1900).
Zur Kenntniss des Acetessigesters.
T = 25°.
- 663.** H. Goldschmidt, L. Röder. Ber. Deutsch. Chem. Ges. 28, 2013-2020, (1895).
Zur Kenntniss der Aldoximsalze.
- 664.** H. Goldschmidt, R. M. Salcher. Zeit. Phys. Chem. 29, 89-118, (1899).
Studien über die Aminolyse. [Same as **1558**.]
T = 25°.
- 665.** H. Goldschmidt, V. Scholz. Ber. Deutsch. Chem. Ges. 36, 1333-1341, (1903).
Ueber Verseifungsgeschwindigkeit und Affinitätsgrösse des Malonsäurediäthylesters.
- 666.** H. Goldschmidt, V. Scholz. Ber. Deutsch. Chem. Ges. 40, 624-641, (1907).
Ueber die Verseifungsgeschwindigkeit einiger Keto- und Oxsäureester. [Given in **1594**.]
T = 25°.
- 667.** H. Goldschmidt, E. Sunde. Ber. Deutsch. Chem. Ges. 39, 711-725, (1906).
Ueber Esterbildung.
T = 25°.
- 668.** M. Gomberg. Am. Chem. Jour. 25, 317-335, (1901).
On trivalent carbon.
- 669.** M. Gomberg. Ber. Deutsch. Chem. Ges. 35, 2397-2408, (1902).
Ueber Triphenylmethyl. Ein Beitrag zur Kenntniss der Carboniumsalze.
T = -18° to -10°.
- 670.** (M. Gomberg. Ber. Deutsch. Chem. Ges. 36, 3927-3930, (1903).
Ueber die Existenzfähigkeit einer Klasse von Körpern, die dem Triphenylmethyl analog sind.) [Quoted.]
M. Gomberg see N. E. Tousley.
- 671.** M. Gomberg, L. H. Cone. Ber. Deutsch. Chem. Ges. 37, 2033-2051, (1904).
Ueber Triphenylmethyl. [Corrected in **673**.]
T = 0°.

- 672. M. Gomberg, L. H. Cone.** Ber. Deutsch. Chem. Ges. 37, 3538–3547, (1904).
 Ueber Triphenylmethyl.
- 673. M. Gomberg, L. H. Cone.** Ber. Deutsch. Chem. Ges. 38, 1333–1344, (1905).
 Ueber Triphenylmethyl. [Also corrects 671.]
- 674. (H. M. Goodwin, H. T. Kalmus.** Phys. Rev. 27, 322–328, (1908).
 On the conductance and fluidity of fused salts.) [Inorganic.]
- 675. (H. M. Goodwin, R. D. Mailey.** Phys. Rev. 25, 469–489, (1907).
 On the density, electrical conductivity and viscosity of fused salts and their mixtures.) [Inorganic. Abstract given in 677.]
- 676. (H. M. Goodwin, R. D. Mailey.** Phys. Rev. 26, 28–60, (1908).
 On the density, electrical conductivity and viscosity of fused salts and their mixtures.) [Inorganic.]
- 677. (H. M. Goodwin, R. D. Mailey.** Trans. Am. Electrochem. Soc. 11, 211–223, (1907).
 On the density, electrical conductivity, and viscosity of fused salts.) [An abstract of 675.]
- 678. (H. M. Goodwin, M. de K. Thompson.** Phys. Rev. 8, 38–48, (1899).
 On the dielectric constant and electrical conductivity of liquid ammonia.)
- 679. (H. M. Goodwin, H. A. Wentworth.** Phys. Rev. 24, 77–92, (1907).
 On the ionization of fused salts.) [Inorganic.]
- M. Gorgolewski** see C. Dhéré.
- 680. H. Gorke.** Zeit. Phys. Chem. 61, 495–502, (1907–1908).
 Ueber die Leitfähigkeit von Pikrinsäurelösungen und die Beweglichkeit des H- Ions.
 T=0°, 18° and 25°. $\kappa_{18} \text{ aq.} = 0.8 \times 10^{-6}$; sub.
- 681. H. Gorke.** Dis. Leipzig. (1905).
 Ueber Lösungen stark dissoziierter Elektrolyte. II. Ueber die angeblichen Isomerieen bei Phosphiten und Hypophosphiten. III. Ueber chinoide aci-Nitrophenoläther.
Meas. H. Gorke; see 1092.
 S. v. Gorski see S. v. Laszczynski.
- 682. U. Gouttefangeas.** Ann. Chim. Phys. (8), 17, 515–525, (1909).
 Sur la conductibilité électrique des flammes salées.
Meas. W. Graf; see 738.
 W. Graf see A. Hantzsch.
- 683. O. Graul.** Dis. Würzburg. (1898).
 Ueber isomere Salze aus Aethylnitrolsäure. [Most measurements are given in 684.]
 T=0°. $\mu \text{ aq.} = 1.9 \times 10^{-3}$.
Meas. O. Graul; see 733, 776.
- 684. O. Graul, A. Hantzsch.** Ber. Deutsch. Chem. Ges. 31, 2854–2879, (1898).
 Ueber isomere Salze aus Aethylnitrolsäure. [Most measurements are given in 683.]
 T=0°.
- 685. (W. H. Green.** Jour. Chem. Soc. 93, 2023–2048, (1908).
 Studies on the viscosity and conductivity of some aqueous solutions. Part I. Solutions of sucrose, hydrogen chloride, and lithium chloride.)
- 686. W. H. Green.** Jour. Chem. Soc. 93, 2049–2063, (1908).
 Studies on the viscosity and conductivity of some aqueous solutions. Part. II. Mixtures of solutions of sucrose and lithium chloride. A contribution towards

the elucidation of the connexion between ionic mobility and the fluidity of the solution.

T = 25.00°.

Gregory = MacGregory, q. v.

687. H. Greinacher. *Phys. Zeit.* 10, 986-997, (1909).

Ueber die Erhöhung der Leitfähigkeit flüssiger Dielektrika durch α -Strahlen.

H. Gross see E. Lellmann.

688. (H. Grossmann. *Zeit. Anorg. Chem.* 54, 40-44, (1907).

Zur Komplexbildung in Molybdänsäurelösungen.)

H. Grossmann see N. Caro.

689. H. Grossmann, P. v. d. Forst. *Ber. Deutsch. Chem. Ges.* 37, 4141-4144, (1904).

Die Doppelcyanide des Quecksilbers.

T = 25°.

690. H. Grossmann, P. v. d. Forst. *Zeit. Anorg. Chem.* 43, 94-110, (1905).

Die Doppelcyanide des Kupfers.

T = 25°.

691. H. Grossmann, H. Krämer. *Ber. Deutsch. Chem. Ges.* 36, 1606-1610, (1903).

Ueber die Einwirkung organischer Säuren auf die Leitfähigkeit der gelben Molybdänsäure. [The measurements are given more fully in 692 and 1023.]

R. O. κ aq. = $1.5-2 \times 10^{-6}$; sub.

692. H. Grossmann, H. Krämer. *Zeit. Anorg. Chem.* 41, 43-60, (1904).

Meas. A. Rosenheim.

Ueber einige Komplexverbindungen der Molybdän- und Wolframsäure mit organischen Säuren. [See also 1023.]

T = 15° and 25°. R. O.

H. Grünbaum see A. Rosenheim.

E. Grüneisen see F. Kohlrausch.

693. P. Grützner. *Arch. Gesammt. Physiol.* 68, 168-175, (1897).

Die Caseinausfällung, ein einfaches Mittel, um die Acidität von Säuren zu bestimmen.

694. L. Grunmach. *Ann. Physik.* (4), 28, 217-258, (1909).

Bestimmung der Oberflächenspannung und anderer physikalischer Konstanten von Essigsäure-Wassermischungen.

T = 19.00° and 20.00°. [R. O.?]]

695. F. Gudzent. *Zeit. Physiol. Chem.* 60, 25-37, (1909).

Physikalisch-chemische und chemische Untersuchungen über das Verhalten der Harnsäure in Lösungen.

T = 37°. R. O. κ_{18} aq. = $0.9-1.0 \times 10^{-6}$; sub. unless otherwise stated.

696. F. Gudzent. *Zeit. Physiol. Chem.* 60, 38-68, (1909).

Physikalisch-chemische Untersuchungen über das Verhalten der harnsauren Salze in Lösungen.

R. O. κ_{18} aq. = $0.9-1.0 \times 10^{-6}$.

A. Günther see T. Paul.

697. (G. Guglielmo. *Atti Accad. Torino.* 17, 543-565, (1881-1882).

Sull'uso dell'elettrometro nella misura della resistenza dei liquidi col metodo di Manco e con quello di Wheatstone e sulla resistenza di alcune soluzioni alcooliche di potassa.) Abstracted in *Beibl. Ann. Physik.* 6, 803-804, (1882). [Inorganic.]

698. J. Guinchant. *Compt. Rend.* 120, 1220-1223, (1895).

Conductibilité de quelques éthers β -cétoniques. [Given in 700.]

T = 25°. [S. U.]]

- 699. J. Guinchant.** Compt. Rend. 121, 71-73, (1895).
Préparation et conductibilité de nouveaux éthers cyanométhiniques. [Given in 700.]
T = 25°. [S. U.]
- 700. J. Guinchant.** Zeit. Phys. Chem. 24, 174-177, (1897).
Studien über die sauren Eigenschaften der Methen- und Methinverbindungen.
R. O. [This is an abstract of Guinchant's thesis, Paris, (1897). The measurements are given in 698 and 699 together, but Λ of the sodium salts is given in full here.]
- 701. J. Guinchard.** Ber. Deutsch. Chem. Ges. 32, 1723-1741, (1899).
Ueber die farbigen Salze aus Violursäure und anderen ringförmigen Oximidoketonen. [Given in 702 with more details.]
T = 0° to 54.1°.
- 702. J. Guinchard.** Dis. Uppsala. (1899).
Beiträge zur Kenntniss labiler Atomgruppierungen und ihrer Umlagerung. [Same as 701 with more detailed measurements.]
- J. M. Guthrie** see J. S. Ford.
- 703. P. A. Guye, S. Bogdan.** Arch. Sci. Phys. Nat. (4), 15, 502-513, (1903).
Méthodes rapides pour l'analyse physico-chimique des liquides physiologiques. [Probably same as 218.]
- 704. E. Gyr.** Dis. Lausanne. (1907).
Conductibilités limites dans quelques dissolvants inorganiques. [Same as 485.]
T = -15° ± 0.2°. S. U. \times SO₂ sub.
E. Gyr see P. Dutoit.

H.

- K. Haas** see C. Bfilow.
Meas. **K. Haas**; see 1030, 1031.
- 705. H. Hndrich.** Zeit. Phys. Chem. 12, 476-497, (1893).
Optisches Drehvermögen und elektrolytische Dissociation.
R. Haertel see H. Stobbe.
Meas. **Hauptli**; see 77.
- 706. (A. Hagenbach.** Ann. Physik. (4), 5, 276-312, (1901).
Ueber die Aenderung der Leitfähigkeit von Salzlösungen in flüssiger schwefliger Säure mit der Temperatur bis über den kritischen Punkt. Elektrolytische Leitung in Gasen und Dämpfen. Absorptionsspectra von Lösungen mit Jodsalzen.) [Inorganic.]
- 707. (A. Hagenbach.** Phys. Zeit. 1, 481-483, (1899-1900).
Ueber elektrolytische Leitung in Gasen beim kritischen Punkte.) [Inorganic.]
- 708. F. Haiser, F. Wenzel.** Monatsh. 30, 377-386, (1909).
Ueber Karnin und Inosinsäure. [Same as 708a.]
T = 25°.
- 708a. F. Haiser, F. Wenzel.** Sitzber. Akad. Wien. 118, 2b, 153-162, (1909).
Ueber Karnin und Inosinsäure. [Same as 708.]
- 709. W. Hallwachs.** Ann. Physik. (3), 68, 1-45, (1899).
Ueber ein Doppelrognrefractometer und Untersuchungen mit demselben an Lösungen von Bromcadmium, Zucker, Di- und Trichloressigsäure, sowie deren Kaliumsalze. [Same as 710.]
T = 12.5°.
- 710. W. Hallwachs.** Sitzber. Ges. Isis. Dresden. (1898), 49-81.
Ueber ein Doppelrognrefractometer, etc. [Same as 709.]
- W. Hallwachs** see F. Kohlrausch.
F. J. Hambly see J. Walker.
Meas. **F. Hamburger**; see 1515.

711. (W. Hampe. Chem. Ztg. 11, 816, (1887).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
712. (W. Hampe. Chem. Ztg. 11, 846-847, (1887).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
713. (W. Hampe. Chem. Ztg. 11, 904-905, (1887).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
714. (W. Hampe. Chem. Ztg. 11, 934-935, (1887).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
715. (W. Hampe. Chem. Ztg. 11, 1109-1110, (1887).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
[Quoted.]
716. (W. Hampe. Chem. Ztg. 11, 1158, (1887).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
717. (W. Hampe. Chem. Ztg. 11, 1549-1550, (1887).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
718. (W. Hampe. Chem. Ztg. 12, 4-5, (1888).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
719. (W. Hampe. Chem. Ztg. 12, 23-24, (1888).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
720. (W. Hampe. Chem. Ztg. 12, 106, (1888).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
721. (W. Hampe. Chem. Ztg. 12, 122, (1888).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
722. (W. Hampe. Chem. Ztg. 12, 140, (1888).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
723. (W. Hampe. Chem. Ztg. 12, 171-173, (1888).
Ueber die electrolytische Leitungsfähigkeit der Haloidverbindungen.)
724. M. Handa. Ber. Deutsch. Chem. Ges. 42, 3179-3182, (1909).
Zur Charakterisierung von Indicatoren.
- 724a. H. Handovsky. Biochem. Zeit. 25, 510-538, (1910).
Untersuchungen über physikalische Zustandsänderungen der Kolloide. X.
Mittheilung. Die Einwirkung von organischen Basen und amphoterer Elektrolyten auf Eiweiss.
T = 25°.
- H. Handovsky see W. Pauli.
725. A. Hantzsch. Ann. Chemie. 296, 84-94, (1897). *Meas. H. Ley.*
Zur Kenntniss der Säureamide.
T = 0°.
726. (A. Hantzsch. Ann. Chemie. 296, 111-119, (1897).
Bemerkungen über Nitramid.) [Corrects 765.]
727. A. Hantzsch. Ber. Deutsch. Chem. Ges. 22, 2827-2840, (1889).
Meas. W. Ostwald.
Umwandlung von Derivaten des Pentamethylens in solche des Benzols,
Pyridins und Thiophens.
728. A. Hantzsch. Ber. Deutsch. Chem. Ges. 23, 1483-1489, (1890). *Meas. G. Bethmann.*
Zur Spaltung des Pentamethylenringes.
729. A. Hantzsch. Ber. Deutsch. Chem. Ges. 25, 827-841, (1892). *Meas. C. Barth.*
Ueber die Spaltungsproducte der Anilsäuren.
730. A. Hantzsch. Ber. Deutsch. Chem. Ges. 28, 1734-1753, (1895).
Diazoniumverbindungen und normale Diazoverbindungen.
T = 1° and 25°.

731. A. Hantzsch. Ber. Deutsch. Chem. Ges. 30, 339-347, (1897). *Meas. W. B. Davidson.*
Zur Kenntniss normaler Diazoverbindungen.
732. (A. Hantzsch. Ber. Deutsch. Chem. Ges. 32, 575-600, (1899).
Zur Constitutionsbestimmung von Körpern mit labilen Atomgruppen.)
[Quoted.]
733. A. Hantzsch. Ber. Deutsch. Chem. Ges. 32, 3066-3088, (1899).
Meas. O. Graul.
Zur Charakteristik von schwachen Säuren und von Pseudosäuren. [The values given here are too high; see 738.]
T = 0°, 25° and 35°. α aq. not sub.
734. A. Hantzsch. Ber. Deutsch. Chem. Ges. 33, 752-760, (1900).
Zur Kenntniss der Salze und Basen aus Triphenylmethanfarbstoffen.
T = 25°.
735. A. Hantzsch. Ber. Deutsch. Chem. Ges. 33, 2161-2179, (1900).
Meas. Schumann, Osswald, Davidson.
Syndiazocyanide und Diazoniumcyanide.
T = 0°.
736. A. Hantzsch. Ber. Deutsch. Chem. Ges. 35, 265-268, (1902). *Meas. M. Buchner.*
Affinitätsconstanten einiger Nitramine und Isonitramine.
T = 0° and 25°.
737. A. Hantzsch. Ber. Deutsch. Chem. Ges. 36, 2069-2075, (1903).
Zur Atomwanderung bei Diazoverbindungen. [Corrects 501.]
738. A. Hantzsch. Ber. Deutsch. Chem. Ges. 37, 1076-1084, (1904).
Meas. W. Graf, S. Pilat, P. Wiegner.
Notiz über amphotere Elektrolyte und speciell über Kakodylsäure.
T = 25°.
739. A. Hantzsch. Ber. Deutsch. Chem. Ges. 37, 2705-2708, (1904).
Berichtigungen zu Hrn. v. Zawidzki's Arbeit über Kakodylsäure. [See 2011.]
740. A. Hantzsch. Ber. Deutsch. Chem. Ges. 38, 1045-1048, (1905).
Zur Molekulargrösse von Salzen in indifferenten Lösungen.
741. A. Hantzsch. Ber. Deutsch. Chem. Ges. 38, 2143-2154, (1905).
Ueber Oxonium- und Ammonium-Salze.
T = 25°.
742. A. Hantzsch. Ber. Deutsch. Chem. Ges. 39, 139-153, (1906). *Meas. F. Hofmann, and M. Lehmann.*
Die Cyanursäure als Pseudosäure.
T = 25°.
743. (A. Hantzsch. Ber. Deutsch. Chem. Ges. 39, 2098-2112, (1906).
Ueber Hrn. Euler's Arbeit "Zur Kenntniss der Pseudosäuren.") [See 513 and 514.]
744. A. Hantzsch. Ber. Deutsch. Chem. Ges. 40, 330-351, (1907). *Meas. N. Rosanoff.*
Ueber Isomerie von Nitrophenolsalzen und die Existenz von Metachinoiden.
T = 25°.
745. A. Hantzsch. Ber. Deutsch. Chem. Ges. 40, 1523-1532, (1907).
Meas. A. Salway.
Ueber farblose, gelbe und rote Salze aus Nitroketonen. [Given in 1567.]
746. A. Hantzsch. Ber. Deutsch. Chem. Ges. 40, 1556-1572, (1907).
Meas. W. Praetorius.
Ueber Konstitution und Körperfarbe der Nitrophenole und speziell des Nitrohydrochinonäthers.
 α aq. sub.

- 747. A. Hantzsch.** Ber. Deutsch. Chem. Ges. 42, 68-85, (1909). *Meas. H. Leupold.*
Polymerie als Ursache der Farbverschiedenheit von Haloidsalzen und Sulfiten.
[Given in 1075.]
T = 25°.
- 748. A. Hantzsch.** Zeit. Anorg. Chem. 25, 332-340, (1900).
Ueber den Einfluss von Nichtelektrolyten auf das Leitvermögen von Elektrolyten.
T = 25°.
- 749. (A. Hantzsch.)** Zeit. Phys. Chem. 56, 57-64, (1906).
Bemerkungen über Pseudosäuren und amphotere Elektrolyte.)
- 750. A. Hantzsch.** Zeit. Phys. Chem. 61, 257-312, (1907-1908). *Meas. F. C. R. Bergius, M. Lehmann.*
Ueber den Zustand von Stoffen in absoluter Schwefelsäure.
T = 25°. R. O. α solvent sub.
- 751. (A. Hantzsch.)** Zeit. Phys. Chem. 65, 41-60, (1908-1909).
Ueber den Zustand von Stoffen in absoluter Schwefelsäure.) [For a criticism of 750 and 751 see 1348 and Oddo, Scandola, Gaz. Chim. Ital. 40, II, 163-209, (1910); also A. Hantzsch, Gaz. Chim. Ital. 39, II, 512, (1909), and Zeit. Phys. Chem. 68, 204, (1909).]
A. Hantzsch see S. M. Auld.
" " " W. B. Davidson.
" " " A. Engler.
" " " H. Euler.
" " " R. C. Farmer.
" " " D. Gerilowski.
" " " O. Graul.
" " " H. Ley.
" " " K. H. Meyer.
- 752. A. Hantzsch, A. Barth.** Ber. Deutsch. Chem. Ges. 35, 210-226, (1902).
Meas. W. Praetorius.
Charakteristik von Pseudosäuren durch abnorme Beziehungen zwischen der Affinitätsconstante und der Hydrolyse ihrer Salze.
T = 0° and 25°. α aq. = 0.6×10^{-6} .
- 753. A. Hantzsch, K. S. Caldwell.** Zeit. Phys. Chem. 58, 575-584, (1907).
Ueber abnorm grosse Ionenbeweglichkeiten.
T = 25°.
- 754. A. Hantzsch, K. S. Caldwell.** Zeit. Phys. Chem. 61, 227-240, (1907-1908). # *Meas. W. Fischer.*
Vergleich von Säuren und Pseudosäuren in Pyridinlösung. [The conclusions and some qualitative statements are given in 321.]
T = 25°. R. O.
- 755. A. Hantzsch, W. B. Davidson.** Ber. Deutsch. Chem. Ges. 29, 1522-1536, (1896).
Ueber Diazophenole.
T = 25°. α aq. = 3×10^{-6} ; sub.
- 756. A. Hantzsch, C. H. Desch.** Ann. Chemie. 323, 1-31, (1902).
Ueber farbige organische Ferriverbindungen.
T = 0° and 25°. α aq. sub.
- 757. A. Hantzsch, F. E. Dollfus.** Ber. Deutsch. Chem. Ges. 35, 226-265, (1902).
Charakteristik von Pseudosäuren durch die "Ammoniakreaction."
T = 20° and 25°.

- 758. A. Hantzsch, W. H. Glover.** Ber. Deutsch. Chem. Ges. 40, 4344-4350, (1907). *Meas. H. Glover.*
Zur Konstitution und Körperfarbe von Derivaten der Dioxime des o-Benzochinons und Naphthochinons. [Same as 644.]
T = 25°
- 759. A. Hantzsch, W. Graf.** Ber. Deutsch. Chem. Ges. 38, 2154-2161, (1905).
Ueber Additionsproducte tertiärer Amine.
T = 25°.
- 760. A. Hantzsch, H. Hibbert.** Ber. Deutsch. Chem. Ges. 40, 1508-1519, (1907). *# Meas. G. Schick.*
Ueber Additionsprodukte von Trialkylphosphinen, -arsinen und -stibinen.
T = 25° for one compound.
- 761. (A. Hantzsch, A. Holl.** Ber. Deutsch. Chem. Ges. 34, 3430-3445, (1901).
Ueber das sogen. Sulfimid.) [Inorganic.]
- 762. A. Hantzsch, P. C. C. Isherwood.** Ber. Deutsch. Chem. Ges. 42, 986-1000, (1909).
Ueber Salze und Ester der Violursäure-Gruppe.
T = 25°.
- 763. A. Hantzsch, M. Kalb.** Ber. Deutsch. Chem. Ges. 32, 3109-3131, (1899).
Ueber Pseudoammoniumbasen.
T = 0° and 25°. κ aq. = 2.1×10^{-6} .
- 764. A. Hantzsch, M. Kalb.** Ber. Deutsch. Chem. Ges. 33, 2201-2208, (1900).
Cotarnincyamid als Pseudosalz.
T = 0° to 40°.
- 765. (A. Hantzsch, L. Kaufmann.** Ann. Chemie. 292, 317-340, (1896).
Zur Kenntniss der untersalpetrigen Säure.) [Qualitative; see 726.]
T = 0°.
- 766. A. Hantzsch, H. Kissel.** Ber. Deutsch. Chem. Ges. 32, 3137-3148, (1899).
Ueber Derivate von Nitrosäuren und die Reactionen der Nitrokörper.
T = 25° and 0°.
- 767. A. Hantzsch, M. Lehmann.** Ber. Deutsch. Chem. Ges. 33, 3668-3685, (1900).
Ueber Bisazoxyessigsäure, Bisazoxymethan und Hydraziessigsäure.
T = 25°.
- 767a. A. Hantzsch, K. H. Meyer.** Ber. Deutsch. Chem. Ges. 43, 336-340, (1910).
Ueber die Bildung farbloser Ionen aus Triphenylmethylbromid. [Part is same as part of 1250.]
T = 25°.
- 768. A. Hantzsch, A. Miolati.** Zeit. Phys. Chem. 10, 1-33, (1892).
Ueber die Beziehungen zwischen der Konfiguration und den Affinitätsgrößen stereoisomerer Stickstoffverbindungen.
T = 0° and 25°.
- 769. A. Hantzsch, G. Osswald.** Ber. Deutsch. Chem. Ges. 32, 641-650, (1899).
Ueber Cyanoform.
T = 0° and 25°.

- 770. A. Hantzsch, G. Osswald.** Ber. Deutsch. Chem. Ges. 33, 278–317, (1900).
Ueber die Umwandlung von Farbbasen in Pseudoammonium-Hydrate, -Cyanide und -Sulfonsäuren. [Corrected in 636.]
T = 0°.
- 771. A. Hantzsch, N. Picton.** Ber. Deutsch. Chem. Ges. 42, 2119–2128, (1909).
Ueber den Chromophor der Salze aus Polynitrobenzol-Derivaten.
- 772. A. Hantzsch, A. Rinckenberger.** Ber. Deutsch. Chem. Ges. 32, 628–641, (1899).
Ueber Nitroform.
T = 0° and 25°.
- 773. A. Hantzsch, R. Robison.** Ber. Deutsch. Chem. Ges. 43, 92–95, (1910).
Notiz über Purpursäure.
T = 0°.
- 774. A. Hantzsch, M. Schümann, A. Engler.** Ber. Deutsch. Chem. Ges. 32, 1703–1716, (1899).
Antidiazohydrate und primäre Nitrosamine. [Part is same as 1602.]
T = 0° and 25°.
- 775. A. Hantzsch, O. W. Schultze.** Ber. Deutsch. Chem. Ges. 29, 2251–2267, (1896). *Meas. W. Davidson.*
Ueber Isomerie der Nitrokörper.
T = 0° and 25°.
- 776. A. Hantzsch, F. Sebaldt.** Zeit. Phys. Chem. 30, 258–299, (1899). *Meas. O. Graul.*
Ueber den Zustand wässriger Ammoniak- und Aminlösungen.
T = 0° to 50°.
- 777. A. Hantzsch, C. H. Sluiter.** Ber. Deutsch. Chem. Ges. 39, 162–166, (1906).
Zur Kenntniss der isomeren Nitroso-urcine.
T = 25°.
- 778. (A. Hantzsch, B. C. Stuer.** Ber. Deutsch. Chem. Ges. 38, 1022–1043, (1905).
Neue Reactionsproducte aus Ammoniak und Sulfurylchlorid.) [Inorganic.]
- 779. A. Hantzsch, A. Vagt.** Ann. Chemie. 314, 339–369, (1901). *# Meas. M. Schümann.*
Ueber das sogenannte Diazoguanidin.
T = 25°.
- 780. A. Hantzsch, A. Veit.** Ber. Deutsch. Chem. Ges. 32, 607–627, (1899).
Zur Kenntniss der Isonitrokörper.
T = 0° and 25°.
- 781. A. Hantzsch, E. Voegelen.** Ber. Deutsch. Chem. Ges. 34, 3142–3163, (1901). *# Meas. M. Buchner.*
Zur Kenntniss der sogenannten Isoamide und der echten Säureamide.
T = 25°.
- 782. A. Hantzsch, E. Voegelen.** Ber. Deutsch. Chem. Ges. 35, 1001–1009, (1902). *# Meas. W. Praetorius.*
Charakteristik von Pseudosäuren durch Leitfähigkeit in wässrigem Alkohol.
T = 25°. x aq. not sub.
- 783. W. Hardt.** Dis. Erlangen. (1901).
Spektroskopisches Verhalten und elektrische Leitfähigkeit des Kobaltchlorids in verschiedenen Lösungsmitteln.
T = 18° and 20°. R. O.

- 783a.** W. B. Hardy. Jour. Physiol. 33, 251-337, (1905-1906).
Colloidal solution. The globulins.
T = 18°. R. O. κ aq. = 3×10^{-6} .
W. B. Hardy see T. B. Wood.
- 784.** C. Harries, P. Hohenemser. Ber. Deutsch. Chem. Ges. 41, 255-260, (1908).
Ueber den monomolekularen Succindialdehyd.
[T = 20°?]
W. Harrison see W. W. H. Gee.
- 785.** T. Harth. Zeit. Anorg. Chem. 14, 323-353, (1897).
Ueber Quecksilberhalogen-Doppelverbindungen.
E. G. J. Hartley see Berkeley.
- 786.** H. Hartley, N. G. Thomas, M. P. Applebey. Jour. Chem. Soc. 93, 538-560, (1908).
Some physico-chemical properties of mixtures of pyridine and water.
T = 0° and 25°. R. O. κ_0 aq. = 1.2×10^{-6} .
- 787.** K. Hartwig. Ann. Physik. (3), 33, 58-80, (1888).
Die electrische Leitungsfähigkeit von Lösungen einiger Glieder der Fettsäurereihe in Wasser und einigen Alkoholen. [See 788.]
T = 0° to 30°. Hg. U.
- 788.** K. Hartwig. Ann. Physik. (3), 43, 839-840, (1891).
Ueber die moleculare Leitungsfähigkeit von Lösungen einiger Glieder der Fettsäurereihe in Wasser und einigen Alkoholen, sowie der Oxalsäure in Aethylalkohol. [Chiefly a recalculation of the measurements in 787.]
T = 18°.
- 789.** K. Hartwig. Progr. Nürnberg. (1886). Abstracted in Beibl. Ann. Physik. 11, 101-102, (1887).
Die electrische Leitungsfähigkeit der wässerigen und alkoholischen Lösungen des Phenols und der Oxalsäure.
T = 18° to 41°. Hg. U.
- 790.** (F. Hasenoehtl. Sitzber. Akad. Wien. 105, 2a, 460-476, (1896).
Ueber den Temperaturcoefficienten der Dielektricitätsconstante in Flüssigkeiten und die Mosotti-Clausius'sche Formel.)
- 791.** (R. v. Hasslinger. Monatsh. 28, 173-207, (1907).
Ueber das Wesen metallischer und elektrolytischer Leitung.) [Inorganic.]
A. Hausdörfer see C. A. Bischoff.
- 792.** F. De F. Heald. Science. (N. S.), 15, 457, (1902).
The electrical conductivity of plant juices. [Qualitative.]
- 793.** W. Hechler. Ann. Physik. (4), 15, 157-173, (1904).
Fluidität und Leitfähigkeit einiger konzentrierter wässriger Salzlösungen unter 0°. [Same as 794 with some corrections.]
T = -20.86° to +7.17°. R. O.
- 794.** W. Hechler. Dis. Münster. (1904).
Fluidität und Leitfähigkeit, etc. [Same as 793 except for some slight errors.]
J. Hecht see R. Wegscheider.
- 795.** E. P. Hedley. Ber. Deutsch. Chem. Ges. 41, 1195-1204, (1908).
Spektroskopische Untersuchung isomerisierbarer Nitrokörper im Ultraviolett. [Measurements given in 796.]
- 796.** E. P. Hedley. Dis. Leipzig. (1908).
Spektroskopische Untersuchung, etc. [Qualitative statement given in 795.]
T = 0° and 25°. R. O. κ aq. = $0.7 - 1.0 \times 10^{-6}$; sub.

797. E. Heiten. Dis. Bonn. (1907).
Ueber Saccharin und Saccharinate und ihre Bildungsgeschwindigkeit aus Zuckerarten unter dem Einfluss von Alkalien. [Same as 1493.]
T = 25°. R. O. α aq. sub.
E. Heiten see E. Rimbach.
B. Held see E. Beckmann.
798. (G. Heller. Ann. Chemie. 332, 247-304, (1904). # *Meas. R. Emrich*. Ueber die Einwirkung von Dichloressigsäure auf Anilin und die Toluidine.) [See 499 for measurement. A correction is made here.]
G. Heller see E. Deussen.
799. A. de Hemptinne. Zeit. Phys. Chem. 31, 35-41, (1899).
Sur les vitesses de réaction.
T about 24°. Hénault see Dony-Hénault.
800. (L. J. Henderson. Am. Jour. Physiol. 21, 173-179, (1908). Concerning the relationship between the strength of acids and their capacity to preserve neutrality.)
801. (L. J. Henderson. Am. Jour. Physiol. 21, 427-448, (1908). The theory of neutrality regulation in the animal organism.) [Inorganic.]
802. (L. J. Henderson. Jour. Am. Chem. Soc. 30, 954-960, (1908). A diagrammatic representation of equilibria between acids and bases in solution.) [Quoted; and theoretical.]
803. L. J. Henderson. Ergebn. Physiol. 8, 254-325, (1909).
Das Gleichgewicht zwischen Basen und Säuren im tierischen Organismus.
- 803a. (L. J. Henderson, A. Forbes. Jour. Am. Chem. Soc. 32, 687-689, (1910).
On the estimation of the intensity of acidity and alkalinity with dinitrohydroquinone.) [Indicators.]
804. L. J. Henderson, K. Spiro. Biochem. Zeit. 15, 105-113, (1908-1909).
Zur Kenntnis des Ionengleichgewichts im Organismus. I. Teil. Ueber Basen- und Säuregleichgewicht im Harn.
805. H. Henkel. Dis. Berlin. (1905).
Beiträge zur Kenntnis der physikalisch-chemischen Eigenschaften verdünnter Glycerinlösungen und zur Analyse derselben. [Same measurements in 806.]
T = 18°. R. O. α_{18} aq. = 1.36×10^{-6} ; sub.
806. H. Henkel, A. W. Roth. Zeit. Angew. Chem. 18, II, 1936-1941, (1905).
Chemische und physikalische Methoden zur Analyse verdünnter rein wässriger Glycerinlösungen. [Same as 805.]
T = 18°. R. O. α_{18} aq. = 1.36×10^{-6} ; sub.
807. V. Henri, L. des Bancelas. Compt. Rend. 136, 1088-1090, (1903).
Loi de l'action de la trypsine sur la gélatine.
T = 44°.
808. V. Henri, L. des Bancelas. Compt. Rend. 136, 1581-1582, (1903).
Loi de l'action de la trypsine sur la gélatine.
T = 44°.
809. F. Henrich. Ber. Deutsch. Chem. Ges. 37, 1406-1415, (1904).
Ueber die Constitution der Orsellinsäure.
T = 25°.
810. F. Henrich. Monatsh. 18, 142-188, (1897).
Ueber zwei Modificationen des Mononitrosoorcins. [Same as 811.]
811. F. Henrich. Sitzber. Akad. Wien. 106, 2b, 155-201, (1897).
Ueber zwei Modificationen, etc. [Same as 810.]

812. P. Henry. *Zeit. Phys. Chem.* 10, 96-129, (1892).
 Ueber die wechselseitige Umwandlung der Laktone und der Oxyssäuren.
 H. Henstock see W. A. Bone.
813. H. Henstock, C. H. G. Sprankling. *Jour. Chem. Soc.* 91, 354-360, (1907).
 $\alpha\gamma$ -Trimethyl- and $\alpha\gamma\gamma$ -tetramethyltricarballic acids and $\alpha\gamma$ -dimethylbutane- $\alpha\beta\delta$ -tricarboxylic acid.
 T = 25°.
814. H. Henstock, B. E. Woolley. *Jour. Chem. Soc.* 91, 1954-1958, (1907).
 The action of phosphorus pentachloride on hydroxytrimethylsuccinic ester. 1:2-Dimethylcyclopropane-1:2-dicarboxylic acid. (1:2-Dimethyltrimethylene-1:2-dicarboxylic acid).
 T = 25°.
 E. Hepner see A. Michaelis.
 C. Herty see A. Werner.
815. C. H. Herty, R. O. E. Davis. *Jour. Am. Chem. Soc.* 30, 1084-1089, (1908).
 The character of the compound formed by the addition of ammonia to ethylphospho-platino-chloride.
 T = 25°.
 J. Hertzmann see A. Rosenheim.
816. H. Herwig. *Ann. Physik.* (2), 159, 61-93, (1876).
 Ueber den Durchgang starker Inductionsströme durch Flüssigkeiten.
Meas. Herwig; see 847.
817. G. Heun. *Dis. Leipzig.* (1897). *Meas. Smith.*
 Ueber die Producte der Condensation des Acetophenons mit dem Diaethyl-Ester der Bernsteinsäure und Malonsäure unter dem Einfluss des Natrium-äthylates.
- 817a. G. v. Hevesy. *Zeit. Elektrochem.* 16, 672-673, (1910).
 Ueber die Elektrolyse in Pyridin gelöster Erdalkalijodide.
 T = 25°.
818. J. T. Hewitt. *Analyst.* 23, 85-90, (1908).
 The constitution of indicators used in acidimetry.
819. A. Heydweiller. *Ann. Physik.* (4), 28, 503-512, (1909).
 Ueber Ionisationswärme und Ionisationskonstante des Wassers.
 Hg. U.
820. A. Heydweiller. *Ann. Physik.* (4), 30, 873-904, (1909). *Meas. J. Wigger.*
 Ueber physikalische Eigenschaften von Lösungen in ihrem Zusammenhang. I. Dichte und elektrisches Leitvermögen wässriger Salzlösungen.
 T = 18°. R. O.
821. (A. Heydweiller. *Verhand. Deutsch. Phys. Ges.* 11, 37-44, (1909).
 Eine einfache Beziehung zwischen Dichte und Dissoziationsgrad wässriger Salzlösungen.) [Quoted. See 1714.]
 A. Heydweiller see F. Kohlrausch.
 H. Hibbert see A. Hantzsch.
 " " see A. Michael.
 S. Higuchi see W. Löb.
822. J. Hildebrand. *Zeit. Elektrochem.* 14, 349-353, (1908).
 Das Königsche Spektralphotometer in neuer Anordnung und seine Verwendung zur Bestimmung chemischer Gleichgewichte.
 T = 25°.
 T. P. Hilditch see J. N. Collie.

- 822a.** A. E. Hill. Jour. Am. Chem. Soc. 32, 1186-1193, (1910).
The inconstancy of the solubility product.
 $T = 25.00^\circ \pm 0.03^\circ$. $\kappa_{25} \text{ aq.} = 2.9 \times 10^{-4}$.
- 823.** E. G. Hill. Jour. Chem. Soc. 89, 1273-1289, (1906).
The hydrolysis of ammonium salts by water.
 $T = 18^\circ$. $\kappa_{18} \text{ aq.} = 1.5 \times 10^{-4}$, or less.
- 824.** (G. D. Hinrichs. Compt. Rend. 143, 549-550, (1906).
La mécanique de l'ionisation par solution.)
F. W. Hinrichsen see E. Rasch.
- 825.** W. His, T. Paul. Zeit. Physiol. Chem. 31, 1-42, (1900-1901).
Physikalisch-chemische Untersuchungen über das Verhalten der Harnsäure und ihrer Salze in Lösungen.
 $T = 18^\circ$. R. O. $\kappa \text{ aq.} = 1.0 \times 10^{-4}$; measurements given both with and without sub.
- 826.** E. Hjelt. Ber. Deutsch. Chem. Ges. 25, 488-491, (1892). *Meas. U. Collan.*
Allyläthyl- und Allylmethylbernsteinsäuren. [For tables of μ and of k of the allylethyl succinic acids, see 830 and 1838.]
- 827.** E. Hjelt. Ber. Deutsch. Chem. Ges. 25, 524-525, (1892). *Meas. U. Collan.*
Notiz über Benzylalkohol-o-carbonsäure.
 $T = 25^\circ$.
- 828.** E. Hjelt. Ber. Deutsch. Chem. Ges. 29, 1855-1859, (1896). *Meas. R. Malmström.*
Ueber einige alkylsubstituirte Valerolactone. [For full tables of μ and k see 831. This only gives k .]
- 829.** (E. Hjelt. Ber. Deutsch. Chem. Ges. 31, 1844-1847, (1898).
Ueber die relative Verseifungsgeschwindigkeit der Ester der normalen Säuren der Oxalsäurereihe.) [Quoted.]
- 830.** E. Hjelt. Öfvers. Finska Vet.-Soc. Förhand. 34, 7-10, (1891-1892).
Meas. U. Collan.
Undersökningar öfver symmetrisk allyl-etylbernstensyra. [Given in 1838. Same as part of 826, but contains full tables of μ and k .]
- 831.** E. Hjelt. Öfvers. Finska Vet.-Soc. Förhand. 38, 132-139, (1895-1896).
Meas. R. Malmström.
Ueber einige alkylsubstituirte Valerolactone. [Same as 828 but contains full tables of μ and k .]
E. Hjelt see C. A. Bischoff.
- 832.** (P. Hodge. Phys. Rev. 26, 540-541, (1908).
A study of photo-electric cells containing a fluorescent electrolyte.) [A summary of 833.]
- 833.** P. Hodge. Phys. Rev. 28, 25-44, (1909).
An experimental study of photo-active cells with fluorescent electrolytes. I.
 $T = 0^\circ$ and room temperature.
- 834.** B. Hodgson. Phil. Mag. (6), 18, 252-258, (1909).
The conductivity of dielectrics under the action of radium rays.
- 835.** R. Höber. Arch. Gesammt. Physiol. 81, 522-539, (1900).
Ueber die Hydroxylionen des Blutes.
- 836.** R. Höber. Arch. Gesammt. Physiol. 99, 572-593, (1903).
Ueber die Hydroxylionen des Blutes.
- 836a.** R. Höber. Arch. Gesammt. Physiol. 133, 237-253, (1910).
Eine Methode die elektrische Leitfähigkeit im Innern von Zellen zu messen.

- 836b.** (R. Höber. Zeit. Elektrochem. 16, 681-686, (1910).
 Fortschritte in den Beziehungen zwischen physikalischer Chemie und Physiologie. II. Die Beteiligung von Wasserstoff- und Hydroxylionen bei physiologischen Vorgängen.)
- 837.** (J. H. van't Hoff. Zeit. Phys. Chem. 18, 300-304, (1895).
 Ueber das Verdünnungsgesetz bei Salzen.) [Quoted.]
Meas. J. H. van't Hoff; see **540**.
- 838.** J. H. van't Hoff, L. T. Reicher. Zeit. Phys. Chem. 2, 777-781, (1888).
 * *Meas.* J. F. Eykmann.
 Ueber die Dissociationstheorie der Elektrolyte.
 T = 14.1° and 19.1°. Hg. U. κ aq. not sub.
- 839.** J. H. van't Hoff, L. T. Reicher. Zeit. Phys. Chem. 3, 198-202, (1889).
 Beziehung zwischen osmotischem Druck, Gefrierpunktserniedrigung und elektrischer Leitfähigkeit.
 T = 14°. Hg. U. κ aq. sub.
Meas. F. Hofmann; see **742**, **1137**.
- 840.** K. A. Hofmann, H. Kirmreuther, A. Thal. Ber. Deutsch. Chem. Ges. 43, 183-188, (1910).
 Carboniumperchlorate (2. Mitteilung) und das Lösungsvermögen der gechlorten Aethane.
 T = 17°, 18° and 19°.
 P. Hohenemser see C. Harries.
 C. Hohmann see W. Nernst.
 L. Holborn see F. Kohlrausch.
- 841.** K. Holdermann. Arch. Pharm. 243, 600-617, (1905).
 Ueber Quecksilberoxycyanid.
 T = 25°. κ_{25} aq. = 6.6×10^{-6} ; measurements made with and without sub.
 A. Holl see A. Hantzsch.
- 842.** R. J. Holland. Ann. Physik. (3), 50, 261-292, (1893).
 Ueber die Aenderung der electrischen Leitfähigkeit einer Lösung durch Zusatz von kleinen Mengen eines Nichtleiters.
 T = 18°. Hg. U.
- 843.** C. Hollander. Dis. München. (1902). *Meas.* V. Rothmund.
 Synthese der Ecgoninsäure. Studien zur Synthese des Hygrins. [Same as **1978**.]
 T = 25°.
 C. Hollander see R. Willstätter.
- 844.** A. F. Holleman. Rec. Trav. Chim. 14, 121-130, (1895).
 Recherches sur le phénylnitrométhane.
 T = 24.9°.
- 845.** A. F. Holleman. Rec. Trav. Chim. 16, 162-171, (1897).
 Sur les acides nitrobarbiturique et diméthylnitrobarbiturique.
 T = 24.5° to 25.0°.
- 846.** A. F. Holleman. Rec. Trav. Chim. 21, 56-58, (1902). [*Meas.* G. L. Voerman?]
 Quelques observations sur l'acide chloro-amidobenzofque.
 R. O.
- 847.** A. F. Holleman. Rec. Trav. Chim. 21, 432-447, (1902). * *Meas.* Herwig.
 Sur la préparation des dinitrophénols et des dinitranisols, et sur quelques-unes de leurs propriétés physiques.
 T = 25.0°.

848. A. F. Holleman. *Zeit. Phys. Chem.* 12, 125-139, (1893).
Bestimmungen der Löslichkeit sogenannter unlöslicher Salze.
T = 11° to 26°. S. U. κ aq. = 8×10^{-6} ; sub.
Meas. Holleman; see 79, 837.
849. A. F. Holleman, B. R. de Bruyn. *Rec. Trav. Chim.* 20, 360-364, (1901).
Sur la conductibilité électrique des acides chloro- et bromonitrobensoïques.
A. F. Holleman, H. A. Sirks, see 1628.
A. F. Holleman, G. L. Voerman, see 1812.
850. B. Holmberg. *Ann. Chemie.* 353, 131-138, (1907).
Ueber Methintrithioglycolsäure.
851. B. Holmberg. *Ann. Chemie.* 359, 81-99, (1908).
Organische Polysulfide.
T = 25°. R. O.
852. B. Holmberg. *Jour. Prakt. Chem.* (2), 71, 264-295, (1905).
Estersäuren von schwefelsubstituierter Kohlensäure mit aliphatischen Alkoholsäuren.
T = 25°. κ aq. = 1.3×10^{-6} ; not sub.
853. B. Holmberg. *Jour. Prakt. Chem.* (2), 75, 169-187, (1907).
Estersäuren von schwefelsubstituierter Kohlensäure mit aliphatischen Alkoholsäuren.
854. B. Holmberg. *Jour. Prakt. Chem.* (2), 79, 253-270, (1909).
Estersäuren von schwefelsubstituierter Kohlensäuren mit aliphatischen Alkoholsäuren.
855. B. Holmberg. *Zeit. Phys. Chem.* 62, 726-730, (1908).
Zur Kenntnis der amphoterer Elektrolyte.
T = 25.0°. κ aq. not over 2×10^{-6} .
- 855a. B. Holmberg. *Zeit. Phys. Chem.* 70, 153-157, (1910).
Ueber den amphoterer Charakter der Kakodylsäure.
T = 25°. κ_{25} aq. = $1.4 - 1.5 \times 10^{-6}$.
856. B. Holmberg, K. Mattisson. *Ann. Chemie.* 353, 123-130, (1907).
Zur Kenntnis einiger Mercaptalsäuren.
R. O.
857. (J. Holmes, P. J. Sageman. *Jour. Chem. Soc.* 95, 1919-1943, (1909).
Contributions to the theory of solutions.)
E. Holzweissig see H. Ley.
858. (R. Hosking. *Phil. Mag.* (6), 7, 469-484, (1904).
The electrical conductivity and fluidity of solutions.) [Inorganic.]
859. T. van Hove. *Bul. Acad. Belg.* (1909), 282-294.
Étude dynamique de deux dérivés alkylés de l'acide phosphorique.
T = 25°.
- 859a. H. E. Howe. *Phys. Rev.* 30, 453-459, (1910).
The electrical conductivity of fluorescent anthracene vapor.
T = 200° to 250°.
860. W. T. H. Howe. *Am. Chem. Jour.* 18, 390-401, (1896).
On the existence of two orthophthalic acids. [Untrustworthy. See *Am. Chem. Jour.* 18, 829.]
861. F. H. Howies, J. F. Thorpe. *Proc. Chem. Soc.* 15, 103-104, (1899).
Meas. Lidbury.
 β -Isopropylglutaric acid.
862. (W. Huiskamp. *Zeit. Physiol. Chem.* 34, 32-54, (1901-1902).
Ueber die Elektrolyse der Salze des Nucleohistons und Histons.)

- 863. E. Humphrey.** Dis. Zürich. (1901).
 Ueber die Bindungsstelle der Metalle in ihren Verbindungen und über Dinitrodiäthylendiaminkobaltisalze. [Same as 1949.]
E. Humphrey see **A. Werner.**
D. Hurmuzescu see **L. Benoist.**
- 864. (M. Huybrechts.** Ann. Chim. Phys. (8), 11, 68-101, (1907).
 Sur la vitesse des ions des électrolytes; sulfate de magnésium et acide sulfurique en solutions aqueuses diluées.) [Inorganic.]

I.

- K. Ingebrechtsen** see **H. Goldschmidt.**
H. Ingle see **J. Thiele.**
- 865. J. K. H. Inglis, L. E. Knight.** Jour. Chem. Soc. 93, 1595-1600, (1908).
 The conductivities of the α -Oximino-fatty acids.
 T = 25°. [R. O.] κ aq. = 2.1×10^{-6} .
- 866. J. K. H. Inglis, L. E. Knight.** Proc. Chem. Soc. 24, 191, (1908).
 The conductivities of the α -oximino-fatty acids. [Qualitative. A summary of 865.]
- W. Isajew** see **N. Zelinsky.**
Isaposhnikov see **Sapožnikov.**
P. C. C. Isherwood see **A. Hantzsch.**
- 867. H. Itzig.** Dis. Erlangen. (1899).
 Ueber einige complexe Salze der Wein- und Aepfelsäure von hoher spezifischer Drehung. [Same as 1521.]
 T = 25°. **H. Itzig** see **A. Rosenheim.**
Izgaruishev see **Izgaryšev.**
N. Izgaryšev see **N. Zelinsky.**

J.

- L. L. Jackson** see **K. Auwers.**
- 868. A. Jacob.** Dis. Heidelberg. (1894). *Meas. H. Wislicenus.*
 Ueber zwei stereochemisch isomere Butantetracarbonsäuren. [Same as 66 for acids, with tables of μ .]
A. Jacob see **K. Auwers.**
- 869. C. A. Jacobson.** Dis. Johns Hopkins. (1908).
 The conductivity and ionization of electrolytes in aqueous solutions as conditioned by temperature, dilution and hydrolysis. [Same as 911.]
 T = 0° to 35°. κ aq. sub.
C. A. Jacobson see **H. C. Jones.**
- 870. (G. Jäger.** Sitzber. Akad. Wien. 104, 2a, 408-425, (1895).
 Ueber die elektrolytische Leitfähigkeit von wässrigen Lösungen, insbesondere deren Abhängigkeit von der Temperatur.) [Inorganic.]
- 871. (G. Jäger.** Sitzber. Akad. Wien. 104, 2a, 671-679, (1895).
 Zur Theorie der Dissociation der Gase.)
- 872. G. Jaffé.** Ann. Physik. (4), 25, 257-284, (1908).
 Ueber die Ionisation flüssiger Dielektrika durch Radiumstrahlen.
- 873. G. Jaffé.** Ann. Physik. (4), 28, 326-370, (1909).
 Die elektrische Leitfähigkeit des reinen Hexans.
 T = 0° to 40°.

- 873a.** G. Jaffé. *Ann. Physik.* (4), 32, 148-178, (1910).
Ueber die spezifische Geschwindigkeit und Wiedervereinigung der Ionen in Hexan.
- 874.** G. Jaffé. *Jour. Phys.* (4), 5, 263-270, (1906).
Sur la conductibilité électrique de l'éther de pétrole sous l'action du radium.
- 875.** H. Jahn. *Zeit. Phys. Chem.* 16, 72-90, (1895). *Meas. E. Schröder.*
Ueber die Abhängigkeit des Dissociationszustandes einiger Säuren der Fettreihe von der Temperatur.
T = 10° to 54° ± 0.1°. S. U. x aq. sub.
- 876.** (H. Jahn. *Zeit. Phys. Chem.* 58, 641-658, (1907).
Ueber die Wanderungsgeschwindigkeit der Ionen in verdünnten Lösungen.)
[Inorganic.]
- 877.** A. A. Jakowkin. *Zeit. Phys. Chem.* 29, 613-657, (1899).
Ueber die Hydrolyse des Chlors.
T = 25° and 0°.
- 877a.** (A. A. Jakowkin. *Zeit. Phys. Chem.* 70, 158-197, (1910).
Zur Theorie der Lösungen.)
- 878.** A. Jappelli. *Zeit. Biol.* 51, 435-459, (1908).
Untersuchungen über die Speichelabsonderung. IV. Einfluss einiger Nicht-Elektrolyten auf die physiko-chemischen Eigenschaften des Blutes und des Speichels und auf die Speichelsekretion.
A. Jappelli see F. Bottazzi.
" " see F. Bottazzi, G. Buglia.
- 879.** G. Jappelli. *Zeit. Biol.* 48, 398-431, (1906).
Ueber die physiko-chemischen Bedingungen der Speichelabsonderung.
- 880.** G. Jappelli. *Zeit. Biol.* 51, 42-78, (1908).
Untersuchungen über die Speichelabsonderung. II. Speichelvarietäten und Einfluss des Reizungsortes auf die physiko-chemischen Eigenschaften des Unterkieferspeichels.
T = 37°.
- 881.** G. Jappelli. *Zeit. Biol.* 51, 127-176, (1908).
Untersuchungen über die Speichelabsonderung. III. Einfluss der Frequenz, Intensität und Dauer der elektrischen Reize auf die physiko-chemischen Eigenschaften des Speichels.
T = 37°.
- 881a.** A. Jaques. *Trans. Faraday Soc.* 5, 225-243, (1910).
Contributions to the study of ionisation in aqueous solutions of lead acetate and cadmium acetate.
T = 25°.
- 882.** G. F. Jaubert. *Ber. Deutsch. Chem. Ges.* 28, 1578-1585, (1895).
Meas. A. Miolati.
Ueber Beziehungen der Safranine zu den Mauveinen und Indulinen.
T = 25°.
- 883.** (G. Jaumann. *Ann. Physik.* (4), 3, 578-617, (1900).
Zur Theorie der Lösungen.) [Same as 884.]
- 884.** (G. Jaumann. *Sitzber. Akad. Wien.* 109, 2a, 512-553, (1900).
Zur Theorie der Lösungen.) [Same as 883.]
K. Jaunsnicker see C. A. Bischoff.
W. P. Javorskij see J. I. Michajlenko.
- 885.** P. Jehl. *Dis. Strassburg.* (1901).
Ueber die sechs stereoisomeren Phenylparaconsäuren. [Same as 579.]
T = 20°. R. O.
Meas. P. Jehl; see 579.

886. S. M. Jørgensen. Zeit. Anorg. Chem. 19, 109-157, (1899). *Meas. E. Petersen.*
Zur Konstitution der Kobalt-, Chrom- und Rhodiumbasen.
T = 25°.
F. M. G. Johnson see J. W. Walker.
887. F. M. G. Johnson, D. McIntosh. Jour. Am. Chem. Soc. 31, 1138-1144, (1909).
Liquid chlorine.
T below -34°.
J. M. Johnson see S. F. Acree.
888. J. Johnston. Ber. Deutsch. Chem. Ges. 37, 3625-3627, (1904).
Ueber den amphoteren Charakter der Kakodylsäure.
T = 25°. κ_{18} aq. = 0.65×10^{-6} ; not sub.
889. J. Johnston. Jour. Am. Chem. Soc. 31, 1010-1020, (1909).
The change of the equivalent conductance of ions with the temperature.
890. J. Johnston. Zeit. Phys. Chem. 57, 557-573, (1906).
Die Affinitätskonstanten amphoterer Elektrolyte. I. Methyl-derivate der p-Amidobenzoesäure und des Glykokolls. [Same as 891.]
T = 25°. κ_{25} aq. = 1.5×10^{-6} ; not sub.
891. J. Johnston. Proc. R. Soc. London. A, 78, 82-102, (1906).
The affinity constants of amphoteric electrolytes. I. -Methyl derivatives of para-aminobenzoic acid and of glycine. [Same as 890.]
Meas. J. Johnston; see 1868, 1877.
J. Johnston see A. A. Noyes.
892. (S. M. Johnston. Trans. R. Soc. Edinburgh. 45, 193-240, (1905-1907).
On the elevation of the boiling points of aqueous solutions of electrolytes.) [Inorganic.]
893. (S. M. Johnston. Trans. R. Soc. Edinburgh. 45, 855-884, (1905-1907).
The boiling and freezing points of concentrated aqueous solutions, and the question of the hydration of the solute.) [Inorganic.]
T = 0° and 99.4°.
Jolivet see Pelet-Jolivet.
894. H. C. Jones. Am. Chem. Jour. 16, 1-19, (1894).
On the combination of sulphuric acid with water in the presence of acetic acid. [Same as 900.]
T = 25°. S. U.
895. H. C. Jones. Am. Chem. Jour. 18, 623-624, (1896).
The conductivity of solutions of acetylene in water. [A correction of 902.]
896. (H. C. Jones. Am. Chem. Jour. 25, 232-249, (1901).
The dissociating power of different solvents. A summary.) [A fairly complete review of the literature up to that date.]
897. (H. C. Jones. Am. Chem. Jour. 35, 445-450, (1906).
The bearing of hydrates on the temperature coefficients of conductivity of aqueous solutions.) [Same as 899. Inorganic.]
898. (H. C. Jones. Am. Chem. Jour. 41, 19-57, (1909).
The present status of the solvate theory.) [A summary of his work done with others.]
899. (H. C. Jones. Chem. News. 93, 274-275, (1906).
The bearing of hydrates on the temperature coefficients of conductivity of aqueous solutions.) [Same as 897.]
900. H. C. Jones. Zeit. Phys. Chem. 13, 419-436, (1894).
Ueber die Verbindung von Schwefelsäure mit Wasser in Gegenwart von Essigsäure. [Same as 894.]
T = 25°. S. U.

- 901. H. C. Jones.** Zeit. Phys. Chem. 55, 385-434, (1906).
Die annähernde Zusammensetzung der Hydrate, welche von verschiedenen Elektrolyten in wässriger Lösung gebildet werden. [This seems to be a summary of his previous work with others. See 903 and 910.]
T = 0° and 25°. S. U.
- 901a. (H. C. Jones.** Zeit. Phys. Chem. 74, 325-379, (1910).
Im hiesigen Laboratorium während der vergangenen zwölf Jahre erhaltene Anhaltspunkte für die Existenz von Solvaten in Lösung.) [Conclusions drawn from work by himself and others. See 894 and the references that follow.]
H. C. Jones see A. M. Clover.
" " " see M. R. Schmidt.
" " " see G. F. White.
- 902. H. C. Jones, C. R. Allen.** Am. Chem. Jour. 18, 375-377, (1896).
Meas. C. R. Allen.
The conductivity of solutions of acetylene in water. [See correction in 895.]
T is about 0°. S. U.
- 903. H. C. Jones, H. P. Bassett.** Am. Chem. Jour. 34, 290-349, (1905).
The approximate composition of the hydrates formed by a number of electrolytes in aqueous solutions; together with a brief general discussion of the results thus far obtained.
T = 0° and 25°. S. U.
- 904. H. C. Jones, E. C. Bingham.** Am. Chem. Jour. 34, 481-554, (1905).
Meas. L. McMaster.
The conductivity and viscosity of solutions of certain salts in mixtures of acetone with methyl alcohol, with ethyl alcohol, and water. [Same as 187. Given in 905 and 906.]
T = 25°. S. U.
- 905. H. C. Jones, E. C. Bingham, L. McMaster.** Zeit. Phys. Chem. 57, 193-243, (1906).
Ueber Leitfähigkeit und innere Reibung von Lösungen gewisser Salze in den Lösungsmittelgemischen; Wasser, Methylalkohol, Aethylalkohol und Aceton.
T = 0° and 25°. $\kappa_0 \text{ aq.} = 1 \times 10^{-6}$. S. U. [This is a summary of work by Jones and the others. See 904 and 918.]
- 906. H. C. Jones, E. C. Bingham, L. McMaster.** Zeit. Phys. Chem. 57, 257-320, (1906).
Ueber Leitfähigkeit und innere Reibung von Lösungen gewisser Salze in den Lösungsmittelgemischen; Wasser, Methylalkohol, Aethylalkohol und Aceton.
T = 0° and 25°. S. U. [A continuation of 905. See 992 for correction regarding priority.]
- 907. H. C. Jones, B. P. Caldwell.** Am. Chem. Jour. 25, 349-390, (1901).
Contribution to the study of aqueous solutions of double salts. IV. Iodides, cyanides, nitrates and sulphates.
T = 25°. S. U. $\kappa \text{ aq.} = 1.10 - 3.0 \times 10^{-6}$; sub.
- 908. H. C. Jones, C. G. Carroll.** Am. Chem. Jour. 32, 521-583, (1904).
A study of the conductivities of certain electrolytes in water, methyl and ethyl alcohols, and mixtures of these solvents. Relation between conductivity and viscosity. [Same as 357. Given in 913.]
T = 0° and 25°. S. U. κ of solvent is sub.
- 909. (H. C. Jones, J. M. Douglas.** Am. Chem. Jour. 26, 428-453, (1901).
The dissociation of certain acids, bases and salts at different temperatures. [Same as 457. Inorganic.]
T = 0° to 35°.

910. H. C. Jones, F. H. Getman. *Am. Chem. Jour.* 32, 308-338, (1904).
The existence of hydrates in solutions of certain non-electrolytes and the non-existence of hydrates in solutions of organic acids.
T = 0°. S. U.
911. H. C. Jones, C. A. Jacobson. *Am. Chem. Jour.* 40, 355-410, (1908).
The conductivity and ionization of electrolytes in aqueous solutions as conditioned by temperature, dilution and hydrolysis. [Same as 889.]
T = 0°, 10°, 25° and 35°. S. U. κ_{25} aq. = $1.6-2.2 \times 10^{-6}$; sub.
912. H. C. Jones, C. F. Lindsay. *Am. Chem. Jour.* 28, 329-370, (1902).
A study of the conductivity of certain salts in water, methyl, ethyl, and propyl alcohols, and in mixtures of these solvents. [Same as 1109. Given in 913.]
S. U.
913. H. C. Jones, C. F. Lindsay, C. G. Carroll. *Zeit. Phys. Chem.* 56, 129-178, (1906).
Ueber die Leitfähigkeit gewisser Salze in gemischten Lösungsmitteln; Wasser, Methyl-, Aethyl- und Propylalkohol. [A summary of 908 and 912.]
T varies. S. U. κ aq. = $2-0.8 \times 10^{-6}$.
914. (H. C. Jones, E. Mackay. *Am. Chem. Jour.* 19, 83-118, (1897).
A contribution to the study of water solutions of some of the alums.) [Inorganic.]
915. (H. C. Jones, E. G. Mahin. *Am. Chem. Jour.* 41, 433-442, (1909).
The conductivity of solutions of lithium nitrate in ternary mixtures of acetone, methyl alcohol, ethyl alcohol, and water; together with the viscosity and fluidity of these mixtures.) [Inorganic.]
916. H. C. Jones, E. G. Mahin. *Zeit. Phys. Chem.* 69, 389-418, (1909).
Conductivity and viscosity of dilute solutions of lithium nitrate and cadmium iodide in binary and ternary mixtures of acetone with methyl alcohol, ethyl alcohol and water.
T = 0° and 25°. S. U. κ_0 aq. = 1.2×10^{-6} .
917. H. C. Jones, L. McMaster. *Am. Chem. Jour.* 35, 316-326, (1906).
On the formation of alcoholates by certain salts in solution in methyl and ethyl alcohols.
S. U.
918. H. C. Jones, L. McMaster. *Am. Chem. Jour.* 36, 325-409, (1906).
The conductivity and viscosity of solutions of certain salts in water, methyl alcohol, ethyl alcohol, acetone and binary mixtures of these solvents. [Given in 905 and 906.]
T = 0° and 25°. S. U. κ_{25} aq. = $1.5-2.0 \times 10^{-6}$.
919. (H. C. Jones, J. N. Pearce. *Am. Chem. Jour.* 38, 683-743, (1907).
Dissociation as measured by freezing point lowering and by conductivity. Bearing on the hydrate theory. The approximate composition of the hydrates formed by a number of electrolytes.) [Inorganic.]
920. H. C. Jones, C. A. Rouiller. *Am. Chem. Jour.* 36, 427-487, (1906).
The relative migration velocities of the ions of silver nitrate in water, methyl alcohol, ethyl alcohol and acetone, and in binary mixtures of these solvents, together with the conductivity of such solutions.
T = 0° and 25°. S. U. κ_0 aq. = 1.0×10^{-6} .
921. (H. C. Jones, C. M. Stine. *Am. Chem. Jour.* 39, 313-402, (1908).
The effect of one salt on the hydrating power of another salt present in the same solution.) [Inorganic.]
922. H. C. Jones, W. R. Veazey. *Zeit. Phys. Chem.* 61, 641-697, (1907-1908).
Die Leitfähigkeit und innere Reibung von Lösungen gewisser Salze in Wasser,

Methylalkohol, Aethylalkohol, Aceton und binären Gemischen dieser Lösungsmittel. [Same as 1772.]

$T = 0^\circ$ and 25° . S. U. κ_{25} aq. $= 1.8-2.5 \times 10^{-4}$.

923. H. C. Jones, W. R. Veazey. *Zeit. Phys. Chem.* 62, 44-58, (1908).
Die Leitfähigkeit und innere Reibung von Tetraäthylammoniumjodid in Wasser, Methylalkohol, Aethylalkohol, Nitrobenzol und binären Gemischen dieser Lösungsmittel.

$T = 0^\circ$ and 25° .

924. H. C. Jones, A. P. West. *Am. Chem. Jour.* 34, 357-422, (1905).
A study of the temperature coefficients of conductivity in aqueous solutions and on the effect of temperature on dissociation. [Same as 1953.]

$T = 0^\circ$ to 35° . S. U. κ_{25} aq. $= 1.5-2.0 \times 10^{-4}$.

H. O. Jones see H. J. H. Fenton.

925. (H. O. Jones, O. W. Richardson. *Jour. Chem. Soc.* 81, 1140-1158, (1902).

The decomposition of oxalacetic acid phenylhydrazone in aqueous and acid solutions, and a new method of determining the concentration of hydrogen ions.) [A correction of 561 and 563. See also 926 and 927.]

926. H. O. Jones, O. W. Richardson. *Jour. Chem. Soc.* 81, 1158-1160, (1902).

The dissociation constants of oxalacetic acid and its phenylhydrazone. [Same as 929. See correction in 1991.]

$T = 25^\circ$.

927. (H. O. Jones, O. W. Richardson. *Proc. Cambridge Phil. Soc.* 11, 337-339, (1900-1902).

Note on a method for determining the concentration of hydrogen ions in solution.) [Corrects 563. An abstract of 925.]

928. (H. O. Jones, O. W. Richardson. *Proc. Chem. Soc.* 18, 140-141, (1902).

The decomposition of oxalacetic hydrazone in aqueous and acid solutions, and a new method of determining the concentration of hydrogen ions in solution.) [An abstract of 925.]

929. H. O. Jones, O. W. Richardson. *Proc. Chem. Soc.* 18, 141, (1902).
The dissociation constants, etc. [Same as 926.]

Meas. Jordis; see 314.

930. (P. Joubin. *Compt. Rend.* 124, 228-229, (1897).
Sur la conductibilité moléculaire des sels en dissolution étendue.)

931. G. Just. *Zeit. Elektrochem.* 10, 202-204, (1904).
Ueber Benzinbrände.

T about 15° . R. O.

K.

932. I. Kablukoff. *Jour. Russ. Phys.-chem. Soc.* 23, 391-422, (1891).
On the electrical conductivity of hydrochloric acid in different solvents and on the electrical conductivity of acids dissolved in aqueous alcohol.

$T = 10^\circ$ to 80° . [Almost the same as 933, but has more measurements.]

933. (I. Kablukoff. *Zeit. Phys. Chem.* 4, 429-434, (1889).
Ueber die elektrische Leitfähigkeit von Chlorwasserstoff in verschiedenen Lösungsmitteln.) [Same as 932, except that there is no measurement of the chloroacetic acids.]

Kablukov see Kablukoff.

934. L. Kahlenberg. *Jour. Phys. Chem.* 5, 339-392, (1901).
The theory of electrolytic dissociation as viewed in the light of facts recently ascertained. [Chiefly theoretical; the measurements are qualitative.]

- 935. L. Kahlenberg.** Jour. Phys. Chem. 6, 1-14, (1902).
Instantaneous chemical reactions and the theory of electrolytic dissociation. [Qualitative.]
- 936. L. Kahlenberg.** Jour. Phys. Chem. 6, 45-49, (1902).
Nitriles as solvents in molecular weight determinations. [Qualitative.]
- 937. (L. Kahlenberg.** Phil. Mag. (6), 9, 214-229, (1905).
Recent investigations bearing on the theory of electrolytic dissociation.)
- 938. L. Kahlenberg.** Zeit. Phys. Chem. 17, 577-619, (1895).
Ueber komplexe Tartrate und gewisse alkalische Lösungen des Kupfers und des Bleies.
- 939. L. Kahlenberg.** Zeit. Phys. Chem. 46, 64-69, (1903).
On the electrical conductivity of solutions in sulphocyanates and mustard oils.
T = 25°. R. O.
- 940. (L. Kahlenberg.** Trans. Am. Electrochem. Soc. 13, 265-272, (1908).
On the nature of electrolytic conductors.) [Theoretical; with some qualitative statements.]
- 941. L. Kahlenberg, A. T. Lincoln.** Jour. Phys. Chem. 3, 12-35, (1899).
The dissociative power of solvents. [Given in 1107.]
T = 25°.
- 942. L. Kahlenberg, O. E. Ruhoff.** Jour. Phys. Chem. 7, 254-258, (1903).
On the electrical conductivity of solutions in amyl amine.
T = 25°. R. O.
- 943. L. Kahlenberg, H. Schlundt.** Jour. Phys. Chem. 6, 447-462, (1902).
Solubility, electrolytic conductivity and chemical action in liquid hydrocyanic acid.
T = 0°. R. O.
- 944. L. Kahlenberg, O. Schreiner.** Zeit. Phys. Chem. 20, 547-568, (1896).
Ueber Borsäure und ihrer Salze.
- 945. L. Kahlenberg, O. Schreiner.** Zeit. Phys. Chem. 27, 552-566, (1898).
Die wässerigen Lösungen der Seifen.
T = 25°; for part is 25° to 80°. S. U.
M. Kalb see A. Hantzsch.
- 946. (F. Kalkow.** Dis. Halle. (1897).
Ueber die Formaldehyd-Verbindung des Hydroresorcins.) [No conductivity.]
F. Kalkow see D. Vorländer.
H. T. Kalmus see H. M. Goodwin.
" " " see R. Lorenz.
- 947. A. Kanitz.** Arch. Gesammt. Physiol. 118, 539-546, (1907).
Die Affinitätskonstanten des Tyrosins und des Phenylalanins.
T = 25°. S. U. κ aq. = 2.2×10^{-6} ; sub.
- 948. A. Kanitz.** Zeit. Physiol. Chem. 47, 476-495, (1906).
Die Affinitätskonstanten einiger Eiweisspaltungsprodukte.
T = 25° \pm 0.05°. S. U. κ aq. = $1.6 - 2 \times 10^{-6}$; not sub. unless so stated.
- 949. C. W. Kanolt.** Jour. Am. Chem. Soc. 29, 1402-1416, (1907).
Ionization of water at 0°, 18° and 25° derived from conductivity measurements of the hydrolysis of the ammonium salts of diketotetrahydrothiazole.
T = 0.00°, 18.00° and 25.00° \pm 0.01°. R. O. κ_{18} aq. = $0.15 - 0.60 \times 10^{-6}$; sub.
C. W. Kanolt see J. L. R. Morgan.
T. Karaulow see L. Asher.
L. Karczag see G. Buglia.
E. Karp see L. Pissarjewsky.

950. J. H. Kastle. Am. Chem. Jour. 33, 46-59, (1905).
A method for the determination of the affinities of acids colorimetrically, by means of certain vegetable coloring matters.
951. J. H. Kastle, B. C. Keiser. Am. Chem. Jour. 17, 443-449, (1895).
On the determination of the affinities of acids colorimetrically by means of potassium dichromate.
Meas. Y. Kato; see 1341.
Y. Kato see A. A. Noyes.
952. (H. Kauffmann. Ber. Deutsch. Chem. Ges. 37, 2468-2469, (1904).
Zur Theorie der Pseudosäuren.)
953. (H. Kauffmann. Ber. Deutsch. Chem. Ges. 41, 4396-4412, (1908).
Ueber den Nitro-hydrochinondimethyläther und zur Theorie der Lösungen.)
954. (H. Kauffmann. Zeit. Phys. Chem. 47, 618-624, (1904).
Zur Theorie der Pseudosäuren.) [Quoted.]
F. Kaufler see R. Lorenz.
L. Kaufmann see A. Hantzsch.
955. W. Kawalki. Ann. Physik. (3), 52, 166-190, (1894).
Untersuchungen über die Diffusionsfähigkeit einiger Electrolyte in Alkohol.
T = 18°.
956. W. Kawalki. Ann. Physik. (3), 52, 300-327, (1894).
Untersuchungen über die Diffusionsfähigkeit einiger Electrolyte in Alkohol.
S. A. Kay see J. Walker.
- 956a. F. Kehrmann. Ann. Chemie. 372, 287-355, (1910). *Meas.* W. J. Müller.
Xanthen und Triphenylmethan. [Measurement of the free ester is given in 1292a.]
T = 0° and 18°.
B. C. Keiser see J. H. Kastle.
Meas. Kellas; see 401.
957. H. Keller. Dis. Heidelberg. (1902).
Dynamische Untersuchungen über die Bildung von Azofarbstoffen. [Same as 660, but contains also the constant of dipropylaniline.]
T = 25°.
H. Keller see H. Goldschmidt.
958. A. Kerler. Dis. Erlangen. (1894).
Molekulargewichtsbestimmungen von Salzen in Methyl- und Aethylalkohol nach der Siedemethode neben Bestimmungen der molekularen Leitfähigkeit derselben Salze in obigen Lösungsmitteln und in Wasser.
959. W. Kerp, E. Baur. Arbeit. k. Gesundh. 26, 231-268, (1907).
Zur Kenntnis der gebundenen schwefligen Säuren.
T = 25°. R. O. α aq. = $0.6[\times 10^{-6}]$; sub. for sodium salt.
960. (W. Kerp, E. Baur. Arbeit. k. Gesundh. 26, 297-300, (1907).
Ueber die elektrolytische Dissoziationskonstante der schwefligen Säure.)
T = 25°. R. O. α aq. = 5.8×10^{-7} .
961. W. Kerp, P. Wöhler. Arbeit. k. Gesundh. 32, 89-119, (1909).
Zur Kenntnis der gebundenen schwefligen Säuren. IV. Abhandlung; Ueber die Verbindungen der schwefligen Säure mit dem Citronellal und dem Zimt-aldehyd.
962. W. Kerp, P. Wöhler. Arbeit. k. Gesundh. 32, 120-143, (1909).
Zur Kenntnis der gebundenen schwefligen Säuren. V. Abhandlung; Ueber Sulfitzellulose- Ablauge und furoolschweflige Säure.
T = 25°.
963. R. Kieseritzky. Zeit. Phys. Chem. 28, 385-423, (1899).
Elektrometrische Konstitutionsbestimmungen. [Same as 964.]

964. R. Kieseritzky. Dis. Leipzig. (1899).
Elektrometrische Konstitutionsbestimmungen. [Same as 963.]
965. F. S. Kipping. Jour. Chem. Soc. 67, 139-155, (1895). *Meas. J. Walker.*
Stereoisomeric $\alpha\alpha'$ -dimethylpimelic acids.
H. Kirmreuther see K. A. Hofmann.
966. A. Kirpal. Monatsh. 18, 461-466, (1897).
Zur Kenntniss der Hemipinsäure und der isomeren Estersäuren der Papaverinsäure. [Same as 968.]
 $T = 25^\circ$. $\kappa_{aq.} = 1.7 \times 10^{-4}$.
967. A. Kirpal. Monatsh. 28, 439-445, (1907).
Leitfähigkeitsmessungen an den isomeren Estersäuren der Chinolin- und Cinchomeronsäure. [Same as 969.]
 $\kappa_{aq.} = 2.24 \times 10^{-4}$.
968. A. Kirpal. Sitzber. Akad. Wien. 106, 2b, 460-465, (1897).
Zur Kenntniss der Hemipinsäure, etc. (Same as 966.)
969. A. Kirpal. Sitzber. Akad. Wien. 116, 2b, 337-343, (1907).
Leitfähigkeitsmessungen an den isomeren Estersäuren, etc. [Same as 967.]
Meas. Kissel; see 425.
H. Kissel see A. Hantzsch.
" " see H. Ley.
Kistiakovskij see Kistiakowsky.
970. W. Kistiakowsky. Jour. Russ. Phys.-chem. Soc. 22, 411-430, (1890).
Aqueous solutions of double salts. [Same compounds as in 971, but with additional measurements.]
 $T = 18^\circ$ and 25° . $\kappa_{18 aq.}$ about 2.1×10^{-4} ; [probably sub.].
971. W. Kistiakowsky. Zeit. Phys. Chem. 6, 97-121, (1890).
Die wässerigen Lösungen von Doppelsalzen. [Given in 970.]
 $T = 18^\circ$ and 25° . $\kappa_{18 aq.}$ about 2.1×10^{-4} ; [probably sub.].
972. P. Klason, T. Carlson. Ber. Deutsch. Chem. Ges. 39, 732-738, (1906).
Zur Kenntniss der Thioglykolsäure. [Same as 973.]
 $T = 25^\circ$. R. O. $\kappa_{25 aq.} = 1.6 \times 10^{-4}$; not sub.
973. P. Klason, T. Carlson. Arkiv Kemi. 2, no. 19, 1-9, (1905-1907).
Zur Kenntnis der Thioglykolsäure. [Same as 972.]
C. Kleber see F. Stohmann.
974. (Z. Klemensiewicz. Bul. Acad. Cracov. (1908), 485-494.
Antimonchlorür als ionisierendes Lösungsmittel.) [Inorganic.]
Meas. R. Klien; see 1947.
975. A. Kling. Ann. Chim. Phys. (8), 5, 471-559, (1905).
Contribution à l'étude des alcools cétoniques. [Measurements same as 976, but table also is given.]
 $T = 10.7^\circ$ and 10.8° .
976. A. Kling. Bul. Soc. Chim. (3), 33, 755-760, (1905).
Sur les solutions aqueuses d'acétol. [Curve of measurements same as 975, but no table.]
- 976a. E. Knecht, J. P. Batey. Jour. Soc. Dyers Colour. 25, 194-203, (1909).
On the condition of some dyestuffs in aqueous solution.
 $T = 18^\circ$ and 90° . R. O.
- 976b. E. Knecht, J. P. Batey. Jour. Soc. Dyers Colour. 26, 4-5, (1910).
On the condition of Indigo White in aqueous solution. [Given accurately in 976c.]
 $T = 18^\circ$. R. O.

- 976c.** E. Knecht, J. P. Batey. Jour. Soc. Dyers Colour. 26, 171-173, (1910).
On the condition of Indigo White in aqueous solution. [The measurements in **976b** are of an impure compound.]
T = 18°. R. O.
- L. E. Knight see J. K. H. Inglis.
- 977.** L. Knorr. Ber. Deutsch. Chem. Ges. 28, 706-714, (1895).
Ueber Abkömmlinge der Phenolform des 1-Phenyl-3-methyl-5-pyrazolons.
[Qualitative.]
- L. D. Kobozev see V. F. Timofejev.
- 978.** K. R. Koch. Ann. Physik. (3), 50, 482-484, (1893).
Notiz über eine einfache Methode, um dielectricische Flüssigkeiten auf ihr Leitungsvermögen zu untersuchen.
- E. Köbner see K. Auwers.
- # *Meas.* R. Koefoed; see **1639b**.
- 979.** K. Koelichen. Zeit. Phys. Chem. 33, 129-177, (1900).
Die chemische Dynamik der Acetonkondensation. [Same as **980**.]
- 980.** K. Koelichen. Dis. Leipzig. (1900).
Die chemische Dynamik der Acetonkondensation. [Same as **979**.]
- 981.** (W. Koenigs, A. Eppens. Ber. Deutsch. Chem. Ges. 26, 810-811, (1893).
Ueber das Campherphoron.) [See **503** for measurements.]
- 982.** (J. Koenigsberger. Phys. Zeit. 8, 833-836, (1907).
Ueber die Elektrizitätsleitung in festen Körpern und die Elektronentheorie derselben.)
- 983.** (J. Koenigsberger. Zeit. Elektrochem. 15, 97-105, (1909).
Ueber Elektrizitätsleitung.)
- 983a.** J. Koenigsberger, K. Schilling. Ann. Physik. (4), 32, 179-230, (1910).
Ueber Elektrizitätsleitung in festen Elementen und Verbindungen.
T = 20° to 302°.
- 984.** (F. Körber. Zeit. Phys. Chem. 67, 212-248, (1909).
Ueber den Einfluss des Druckes auf das elektrolytische Leitvermögen von Lösungen.) [Inorganic. Some bibliography. See **1154**, for priority claim.]
- 985.** (F. Kohlrausch. Ann. Physik. (3), 66, 785-825, (1898).
Die Beweglichkeiten electrischer Ionen in verdünnten wässrigen Lösungen bis zu 1-10 normaler Concentration bei 18°.) [Quoted.]
- 986.** F. Kohlrausch. Ann. Physik. Ergänz. 8, 1-16, (1878).
Ueber das elektrische Leitungsvermögen des Wassers und einiger anderer schlechter Leiter.
S. U.
- 987.** (F. Kohlrausch. Zeit. Elektrochem. 13, 333-344, (1907).
Ueber Ionenbeweglichkeiten im Wasser.)
- 988.** (F. Kohlrausch. Zeit. Elektrochem. 14, 129-133, (1908).
Der Temperaturkoeffizient der Ionenbeweglichkeiten im Wasser als Funktion der Beweglichkeit selbst.) [Inorganic.]
- 989.** (F. Kohlrausch. Zeit. Phys. Chem. 18, 662, (1895).
Ueber die Formel von van't Hoff für das Verdünnungsgesetz bei Salzen.)
- 990.** F. Kohlrausch. Zeit. Phys. Chem. 44, 197-249, (1903). # *Meas.* F. Rose.
Ueber gesättigte wässrige Lösungen schwerlöslicher Salze. I. Teil; Die elektrischen Leitvermögen.
T = 18°. R. O. α aq. sub.
- 991.** F. Kohlrausch. Zeit. Phys. Chem. 50, 355-356, (1905).
Die Löslichkeit einiger schwerlöslicher Salze in Wasser bei 18°. [This is a revision of **1004**.]
T = 18°.

- 992.** (F. Kohlrausch. Zeit. Phys. Chem. 58, 630-631, (1907).
Ueber den Temperaturgang des Leitvermögens einer Lösung.) [A correction of 906 regarding priority.]
- 993.** F. Kohlrausch. Zeit. Phys. Chem. 64, 129-169, (1908).
Ueber gesättigte wässrige Lösungen schwerlöslicher Salze. II. Teil; Die gelösten Mengen mit ihrem Temperaturgang.
T = 0° to 38°. κ aq. sub.
- 994.** F. Kohlrausch. Sitzber. K. Preuss. Akad. Berlin. (1900), 1002-1008.
Ueber das elektrische Leitvermögen von Lösungen der Alkali-Jodate und eine Formel zur Berechnung von Leitvermögen. [Inorganic.]
- 995.** (F. Kohlrausch. Sitzber. K. Preuss. Akad. Berlin. (1901), 1026-1033.
Ueber den Temperatureinfluss auf das elektrische Leitvermögen von Lösungen, insbesondere auf die Beweglichkeit der einzelnen Ionen in Wasser.)
- 996.** (F. Kohlrausch. Sitzber. K. Preuss. Akad. Berlin. (1902), 572-580.
Ueber die Temperaturcoefficienten der Ionen im Wasser, insbesondere über ein die einwerthigen Elemente umfassendes Gesetz.)
- 997.** F. Kohlrausch, E. Grüneisen. Sitzber. K. Preuss. Akad. Berlin. (1904), 1215-1222.
Das Leitvermögen wässriger Lösungen von Elektrolyten mit zweiwerthigen Ionen.
- 998.** (F. Kohlrausch, W. Hallwachs. Ann. Physik. (3), 50, 118-126, (1893).
Ueber die Dichtigkeit verdünnter wässriger Lösungen.)
- 999.** F. Kohlrausch, A. Heydweiller. Ann. Physik. (3), 53, 209-235, (1894).
Ueber reines Wasser. [Same as 1000 and 1001.]
T = -3° to +51.0°. Hg. U.
- 1000.** F. Kohlrausch, A. Heydweiller. Zeit. Phys. Chem. 14, 317-330, (1894).
Ueber reines Wasser. [Same as 999 and 1001.]
- 1001.** F. Kohlrausch, A. Heydweiller. Sitzber. K. Preuss. Akad. Berlin. (1894), 295-308.
Ueber reines Wasser. [Same as 999 and 1000.]
- 1002.** (F. Kohlrausch, L. Holborn, H. Diesselhorst. Ann. Physik. (3), 64, 417-455, (1898).
Neue Grundlagen für die Werthe der Leitvermögen von Electrolyten.)
- 1003.** F. Kohlrausch, F. Mylius. Sitzber. K. Preuss. Akad. Berlin. (1904), 1223-1227.
Ueber wässrige Lösungen des Magnesiumoxalats.
T = 18°.
- 1004.** F. Kohlrausch, F. Rose. Ann. Physik. (3), 50, 127-137, (1893).
Die Löslichkeit einiger schwer löslicher Körper im Wasser, beurtheilt aus der electrischen Leitungsfähigkeit der Lösungen. [Same as 1005 and 1006. See 991 for correction.]
T = 2° to 42°. Hg. U. κ aq. sub.
- 1005.** F. Kohlrausch, F. Rose. Zeit. Phys. Chem. 12, 234-243, (1893).
Die Löslichkeit einiger schwer löslicher Körper, etc. [Same as 1004 and 1006.]
- 1006.** F. Kohlrausch, F. Rose. Sitzber. K. Preuss. Akad. Berlin. (1893), 453-462.
Die Löslichkeit einiger schwer löslicher Körper, etc. [Same as 1004 and 1005.]
- 1007.** F. Kohlrausch, H. v. Steinwehr. Sitzber. K. Preuss. Akad. Berlin. (1902), 581-587.
Weitere Untersuchungen über das Leitvermögen von Elektrolyten aus einwerthigen Ionen in wässriger Lösung.
T = 18°.

- 1008. V. Kohlschütter, C. Brittlebank.** Ann. Chemie. 349, 232-268, (1906)
Ueber Thioharnstoffcuprosalze.
T = 25°.
- 1009. H. Koller.** Phil. Mag. (5), 27, 526-527, (1889).
On the passage of electricity through bad conductors. [An abstract of 1010.]
- 1010. H. Koller.** Sitzber. Akad. Wien. 98, 2a, 201-266, (1899).
Ueber den Durchgang von Elektrizität durch sehr schlechte Leiter. [Abstracted in 1009.]
S. U.
Meas. Koller; see 1471.
Konovaloff see Konowalow.
Konovalov see Konowalow.
- 1011. D. Konowalow.** Ann. Physik. (3), 49, 733-760, (1893). # *Meas. Isaposhnikov.*
Ueber die Eigenschaften der Lösungen, welche Amine mit Säuren bilden. [This contains both 1012 and 1013.]
T = 21° and 16°. Hg. U.
- 1012. D. Konowalow.** Jour. Russ. Phys.-chem. Soc. 24, 440-450, (1892).
On the electrical conductivity of solutions. [Same as part of 1011.]
T = 21° and 16°. Hg. U.
- 1013. D. Konowalow.** Jour. Russ. Phys.-chem. Soc. 25, 192-201, (1893). # *Meas. Sapožnikov.*
On the electrical conductivity of solutions. [Same as part of 1011.]
- 1014. (D. Konowalow.** Jour. Russ. Phys.-chem. Soc. 25, 211-222, (1893).
Heat phenomena produced by mixtures of amines with acids.)
Meas. I. Koppel; see 1516.
- 1015. (J. Koppel.** Zeit. Anorg. Chem. 28, 461-473, (1901).
Alkoholhaltige Chromhalogenverbindungen.) [Inorganic.]
T = 0° to 70°.
- 1016. A. v. Korányi, J. Bence.** Arch. Gesamt. Physiol. 110, 513-532, (1905).
Physikalisch-chemische Untersuchungen über die Wirkung der Kohlensäure auf das Blut.
- 1017. F. Koritschoner.** Zeit. Angew. Chem. 20, 641-645, (1907).
Beiträge zur Kenntnis der Abietinsäure.
T = 25°.
F. Korten see E. Rimbach.
- 1018. F. L. Kortright.** Am. Chem. Jour. 18, 365-371, (1896).
The heat of electrolytic dissociation of some acids.
T = 0°. α_0 aq. = 1.7×10^{-6} ; not sub. from acids, sub. from salts.
- 1019. (J. Kossonogoff.** Phys. Zeit. 3, 207-208, (1901-1902).
Zur Frage der Dielektrika.)
- 1020. (J. Kowalski.** Bul. Acad. Cracov. (1891), 255-258.
Ueber den Einfluss des Druckes auf die elektrische Leitungsfähigkeit der Elektrolyte.) [Inorganic.]
- 1021. J. de Kowalski, B. Zdanowski.** Arch. Sci. Phys. Nat. (4), 18, 105-134, (1904). Abstracted in Zeit. Elektrochem. 11, 118-120, (1905).
Nouvelle méthode pour la mesure des résistances électrolytiques liquides et plusieurs de ses applications. [Part is in 1022.]
T = 18.9°. R. O.

1022. J. Kowalski, B. Zdanowski. Bul. Acad. Cracov. (1903), 793-794. Nouvelle méthode pour la mesure, etc. [An abstract of 1021, but without tables of Λ .]

Meas. J. Krzak; see 291.

H. Krämer see H. Grossmann.

1023. J. Kraemer. Dis. Münster. (1904). # Meas. A. Rosenheim. Abstracted in Zeit. Elektrochem, 10, 930-931, (1904).

Beitrag zur Kenntnis der Leitfähigkeit molybdän- und wolframsaurer organischer Komplexe. [This appears to be the same Krämer as in 691 and 692. Same measurements as in 691 and 692, with addition of succinic acid with Na_2WO_4 .]

$T = 25^\circ \pm 0.05^\circ$. R. O. κ aq. $= 2 - 1.5 \times 10^{-6}$; sub.

1024. E. Krannhals. Zeit. Phys. Chem. 5, 250-258, (1890).

Elektrische Leitungsfähigkeit einiger Lösungen bei Temperaturen zwischen 18° und 100° .

T is about 18° , 51° , 82° and 99° . S. U. κ aq. $= 8 \times 10^{-6}$.

Krapivin see Krapiwín.

S. Krapiwín see N. Zelinsky.

1025. (C. A. Kraus. Phys. Rev. 18, 40-56, (1904).

The electrical conductivity of solutions in methyl alcohol in the neighborhood of their critical point.) [Inorganic.]

1026. (C. A. Kraus. Phys. Rev. 18, 89-103, (1904).

The electrical conductivity of solutions in methyl alcohol in the neighborhood of their critical point.) [Inorganic.]

C. A. Kraus see E. C. Franklin.

A. Kreichgauer see R. Schenck.

B. Krönig see T. Paul.

1027. O. Kühling. Ber. Deutsch. Chem. Ges. 38, 1638-1646, (1905).

Meas. W. A. Roth.

Ueber die Elektrolyse des Glykocolls.

1028. F. W. Küster. Sitzber. Ges. Naturw. Marburg. (1896), 24-28.

Ueber die Konstitution der Pentachlorpentdiensäure, hergeleitet aus ihrer elektrischen Leitfähigkeit. [Same as 2030.]

Meas. F. Küster; see 2030. [This is the same Küster as in 1028.]

1029. W. Küster. Ann. Chemie. 315, 174-218, (1901). Meas. Dittrich.

Ueber die Constitution der Hämatinsäuren.

$T = 25^\circ$.

1030. W. Küster. Ann. Chemie. 345, 1-59, (1906). Meas. Haas and Mezger.

Ueber die Constitution der Hämatinsäuren.

$T = 25^\circ$.

1031. W. Küster. Ann. Chemie. 346, 1-27, (1906). Meas. K. Haas.

Ueber die Constitution des Hämapyrrols.

$T = 25^\circ$.

1032. W. Küster. Ber. Deutsch. Chem. Ges. 35, 1268-1273, (1902).

Meas. Westhauser.

Beiträge zur Kenntniss der Gallenfarbstoffe. [Qualitative.]

1033. W. Küster. Ber. Deutsch. Chem. Ges. 35, 2948-2954, (1902). Meas.

O. Mezger.

Beiträge zur Kenntniss des Hämatins. [Same as 1252.]

$T = 25^\circ$.

1034. I. Kukulesko. Jour. Russ. Phys.-chem. Soc. 28, 293-299, (1896).

Meas. Szyzkowski.

The preparation and properties of α -dimethyl- β -isobutylethylenelactic acid.

- 1035. C. Kullgren.** Zeit. Phys. Chem. 37, 613-622, (1901).
 Ueber die Einwirkung von Nichteletkrolyten bei Verseifung von Aethylacetat.
 [Same as 1037.]
 T = 20.7°.
- 1036. C. Kullgren.** Zeit. Phys. Chem. 41, 407-426, (1902).
 Studien über die Inversion. [Same as 1036.]
 T = 20°.
- 1037. C. Kullgren.** Bihang Svensk. Vet.-Akad. Hand. 24, Afd. II, no. 3, 1-26, (1898-1899).
 Icke-elektrolyters inverkan på reaktionshastigheten vid saponifikation af etylacetat. [Same as 1035.]
- 1038. C. Kullgren.** Bihang Svensk. Vet.-Akad. Hand. 27, Afd. II, no. 2, 1-41, (1902-1903).
 Studien über die Inversion. [Same as 1036.]
 T = 20°.
- 1039. C. Kullgren.** Dis. Uppsala. (1904).
 Om metallsalters hydrolysis.
- 1040. (J. Kunz.** Compt. Rend. 135, 788-790, (1902).
 Sur la conductibilité des dissolutions aux basses températures.) [Same as 1041. Inorganic.]
- 1041. (J. Kunz.** Zeit. Phys. Chem. 42, 591-596, (1902-1903).
 Ueber die Abhängigkeit der elektrolytischen Leitfähigkeit von der Temperatur unter 0°.) [Same as 1040.]
 T = -69° to 0°.
- 1042. B. Kuriloff.** Zeit. Phys. Chem. 23, 90-94, (1897).
 Anwendung des Massenwirkungsgesetzes zur Untersuchung der organischen Additionsprodukte. Die Reaktion zwischen Pikrinsäure und β -Naphthol in der wässrigen Lösung.
 T = 25°. κ aq. = 0.35×10^{-6} ; not sub.
 E. K. Kurovskij see S. M. Tanatar.

L.

- 1043. J. J. van Laar.** Zeit. Phys. Chem. 12, 742-750, (1893).
 Ueber die Dissociationskonstante des Wassers und der Cyanwasserstoffsäure.
- 1044. (J. J. van Laar.** Zeit. Phys. Chem. 58, 567-574, (1907).
 Ueber den Dissociationsgrad gesättigter Lösungen eines Elektrolyten in verschiedenen Lösungsmitteln, und von Lösungen, welche im Teilungsgleichgewicht stehen.)
- 1045. (J. J. van Laar.** Zeit. Phys. Chem. 59, 212-217, (1907).
 Ueber die Löslichkeit von Elektrolyten.) [Quoted.]
- 1046. (J. J. van Laar.** Arch. Musée Teyler. (2), 7, 59-95, (1902).
 Sur la loi de dilution chez les électrolytes fortement dissociés.) [Quoted.]
- 1047. S. Labendzinski, R. Abegg.** Zeit. Elektrochem. 10, 77-81, (1904).
 Zur Kenntnis der Konstitution von Salzlösungen.
 Meas. H. Labhardt; see 1512, 1544, 1546.
 T. H. Laby see G. H. Carse.
- 1048. (T. H. Laby, G. A. Carse.** Proc. Cambridge Phil. Soc. 13, 288-295, (1904-1906).
 On a relation between the velocity and the volume of the ions of certain organic acids and bases.) [Theoretical and quoted.]
 W. S. Landis see J. W. Richards.

1049. (W. Landsberger. *Zeit. Anorg. Chem.* 17, 422-454, (1898).
Ein neues Verfahren der Molekelgewichtsbestimmung nach der Siedemethode.)
H. Langbein see F. Stohmann.
" " see F. Stohmann, C. Kleber.
W. Lange see J. Brode.
1050. A. Lapworth. *Jour. Chem. Soc.* 85, 1206-1214, (1904). *Meas. J. Walker.*
Reactions involving the addition of hydrogen cyanide to carbon compounds.
Part II. Cyanohydrins regarded as complex acids. [Qualitative.]
1051. A. Lapworth. *Jour. Chem. Soc.* 93, 2187-2203, (1908). *Meas. R. W. L. Clarke.*
An examination of the conception of hydrogen ions in catalysis, salt formation, and electrolytic conduction.
1052. A. Lapworth. *Proc. Chem. Soc.* 24, 275, (1908). *Meas. R. W. L. Clarke.*
An examination of the conception of hydrogen ions, etc. [Summary of 1051.]
1053. E. Laqueur. *Beitr. Chem. Physiol. Pathol.* 7, 273-297, (1905-1906).
Ueber das Kasein als Säure und seine Unterschiede gegen das durch Lab veränderte Kasein. (Parakasein). Theorie der Labwirkung.
T=25°. R. O.
1054. E. Laqueur, O. Sackur. *Beitr. Chem. Physiol. Pathol.* 3, 193-224, (1902-1903).
Ueber die Säureeigenschaften und das Molekulargewicht des Kaseins und seine Spaltung beim Trocknen. [Part given in 1555.]
T=25°. R. O. κ aq. = 2.6×10^{-6} ; sub.
H. Larsen see H. Goldschmidt.
1055. Lassar-Cohn. *Ann. Chemie.* 251, 335-359, (1889).
Electrolyse der Lösungen organischer Kaliumsalze und des geschmolzenen Kaliumacetats.
1056. S. v. Laszczynski. *Zeit. Elektrochem.* 2, 55-57, (1895-1896).
Ueber die Leitfähigkeit der Lösungen einiger Salze in Aceton.
T=18°.
1057. S. v. Laszczynski, S. v. Gorski. *Zeit. Elektrochem.* 4, 290-293, (1897-1898).
Leitfähigkeit von Lösungen einiger Salze in Pyridin.
T=18°.
1058. W. Latzko. *Dis. Basel.* (1904).
Ueber $\beta\gamma$ -Diphenylvinylelessigsäure und ihre Verwandten. [k is given in 567, but no tables of A are there.]
T=25°. R. O.
W. Latzko see F. Fichter.
1059. (B. Lean. *Jour. Chem. Soc.* 65, 1024-1028, (1894).
Note on the affinities of polybasic acids.) [Same as 1060. Theoretical and quoted.]
1060. (B. Lean. *Mem. Proc. Manchester Lit. Phil. Soc.* (4), 9, 19-30, (1895).
On the affinities of polybasic acids.) [Same as 1059.]
Meas. M. Lehmann; see 742, 750.
M. Lehmann see A. Hantzsch.
Leleux see Gin.
1061. E. Lellmann. *Ann. Chemie.* 270, 204-208, (1892).
Ueber die Affinitätsgrößen der Säuren.
1062. E. Lellmann, A. Görtz. *Ann. Chemie.* 274, 121-141, (1893).
Ueber die Affinitätsgrößen der Basen.

1063. E. Lellmann, H. Gross. *Ann. Chemie.* 260, 269-289, (1890).
Ueber die Affinitätsgrößen der Basen.
1064. E. Lellmann, H. Gross. *Ann. Chemie.* 263, 286-299, (1891).
Ueber die Affinitätsgrößen der Basen.
1065. E. Lellmann, A. Liebmann. *Ann. Chemie.* 278, 141-152, (1894).
Ueber die Affinitätsgrößen der Basen.
1066. E. Lellmann, A. Liebmann. *Ann. Chemie.* 278, 152-173, (1894).
Ueber die Affinitätsgrößen der Säuren.
1067. E. Lellmann, J. Schliemann. *Ann. Chemie.* 270, 208-235, (1892).
Ueber die Affinitätsgrößen der Säuren.
1068. E. Lellmann, J. Schliemann. *Ann. Chemie.* 274, 141-156, (1893).
Ueber die Affinitätsgrößen der Säuren.
1069. E. Lellmann, J. Schliemann. *Ann. Chemie.* 274, 156-173, (1893).
Ueber die Affinitätsgrößen der Säuren.
- N. Lemcke see L. Pissarjewsky.
Lemke see Lemcke.
1070. H. Lemme. *Progr. Glauchau.* (1897).
Aceton als Lösungsmittel für Salze in chemischer und physikalischer Hinsicht.
T = 18° and 25°.
1071. R. Lenz. *Mem. St. Petersburg.* (7), 30, (1882). Abstracted in
Beibl. Ann. Physik. 7, 399-406, (1883).
Ueber das galvanische Leistungsvermögen alkoholischer Lösungen. [Original
not examined. The title is that of the abstract.]
Lesage see Dongier.
1072. Lesage, Dongier. *Compt. Rend.* 134, 612-614, (1902).
Étude de la fermentation lactique par l'observation de la résistance électrique.
T = 16.7°.
1073. Lesage, Dongier. *Compt. Rend.* 135, 111-113, (1902).
Résistivités électriques de sérums sanguins pathologiques et d'épanchements
séreux chez l'homme.
T = 16.7°.
1074. R. Lessing. *Dis. Göttingen.* (1902). *Meas. V. Rothmund.*
Ueber 1,4-N-Methylpyrrolidindicarbonsäure. Ueber eine Bildung von Phenyl-
cyclohexan aus Chinit. [Corrected in 1979.]
R. O.
R. Lessing see S. B. Schryver.
" " see R. Willstätter.
1075. H. Leupold. *Dis. Leipzig.* (1908).
Polymerie als Ursache der Farbverschiedenheit von Acridin- und Chinolin-
salsen. [A of sulphate is given in 747.]
T = 25°.
Meas. H. Leupold; see 747.
M. G. Levi see G. Carrara.
A. Levier see P. Dutoit.
1076. W. Levy. *Dis. Berlin.* (1904).
Studien über Molekularverbindungen. I. Doppelsaltsbildung ungesättigter
Ketone, Aldehyde und Säuren. II. Ueber Platinphosphorhalogenverbind-
ungen und ihre Derivate. [Part is same as 1522, but this also gives
 Λ at 0°.]
T = 25° and 0°.
W. Levy see A. Rosenheim.
- 1076a. (G. N. Lewis. *Zeit. Phys. Chem.* 70, 212-219, (1910).
The use and abuse of the ionic theory.) [Theoretical and inorganic.]

1077. (G. N. Lewis, L. W. Sargent. Jour. Am. Chem. Soc. 31, 355-363, (1909).
The potential of the ferro-ferricyanide electrode.)
1078. G. N. Lewis, L. W. Sargent. Jour. Am. Chem. Soc. 31, 363-367, (1909).
Potentials between liquids.
T = 25°.
1079. (G. N. Lewis, P. Wheeler. Zeit. Phys. Chem. 56, 179-192, (1906).
Die elektrische Leitfähigkeit von Lösungen in flüssigem Iod.) [Same as 1080.
Inorganic.]
1080. (G. N. Lewis, P. Wheeler. Proc. Am. Acad. Arts Sci. 41, 417-432, (1905-1906).
The electrical conductivity of solutions in liquid iodine.) [Same as 1079.]
1081. (W. K. Lewis. Zeit. Phys. Chem. 63, 171-176, (1908).
Eine Methode zur Berechnung von Ionenkonzentrationen aus Potentialmessungen von Konzentrationsketten.) [Inorganic and theoretical.]
1082. (H. Ley. Ber. Deutsch. Chem. Ges. 30, 2192-2196, (1897).
Ueber die hydrolytische Dissociation.) [Inorganic.]
1083. H. Ley. Ber. Deutsch. Chem. Ges. 34, 2620-2631, (1901).
Ueber Oxyamidine.
T = 25°. S. U. κ aq. = 0.8×10^{-6} ; not sub.
1084. H. Ley. Ber. Deutsch. Chem. Ges. 38, 973-978, (1905).
Ueber Quecksilbernitroform; ein Beitrag zur Constitution von Salzlösungen.
[T probably 25°.] R. O.
1085. H. Ley. Ber. Deutsch. Chem. Ges. 38, 2199-2203, (1905).
Ueber colloidales Kupferoxyd.
T = 25°. R. O.
1086. H. Ley. Ber. Deutsch. Chem. Ges. 42, 354-376, (1909).
Beiträge zur Theorie der inneren Komplexsalze.
T = 25°. R. O. κ aq. averages 1.2×10^{-6} ; not sub.
1087. H. Ley. Zeit. Elektrochem. 10, 954-956, (1904).
Ueber innere Metall-Komplexsalze.
T = 25°. R. O.
1088. H. Ley. Zeit. Phys. Chem. 30, 193-257, (1899).
Studien über die hydrolytische Dissociation der Salzlösungen. [Same as 1089.]
- T = 25°. κ aq. = 1.3×10^{-6} ; sometimes sub.
1089. H. Ley. Habilit Schr. Würzburg. (1899).
Studien über die hydrolytische Dissociation der Salzlösungen. [Same as 1088.]
Meas. H. Ley; see 725.
1090. H. Ley, O. Erlen. Zeit. Anorg. Chem. 56, 401-421, (1907).
Ueber Salz- und Komplexsalz-Bildung bei hydroxylhaltigen organischen Säuren. [See 1346 and 1715.]
T = 25°. R. O.
1091. H. Ley, O. Erlen. Zeit. Elektrochem. 13, 797-799, (1907).
Leitfähigkeitsmessungen bei Natriumsalzen der isomeren Oxybenzoesäuren; zur Frage nach der Wanderungsgeschwindigkeit isomerer Anionen. [See 1346 and 1715.]
T = 25°. κ aq. = $1.0-1.5 \times 10^{-6}$; sub.
1092. H. Ley, A. Hantzsch. Ber. Deutsch. Chem. Ges. 39, 3149-3160, (1906). Meas. H. Gorke and A. H. Salway.
Ueber den Zustand der Pseudosäuren in wässriger Lösung. [Part is given in 1567.]
T = 0° and 25°. R. O. κ aq. sub.

1093. H. Ley, E. Holzweissig. Ber. Deutsch. Chem. Ges. 36, 18-24, (1903).
Ueber Oxyamidine.
T = 25°. S. U.
1094. H. Ley, H. Kissel. Ber. Deutsch. Chem. Ges. 32, 1357-1368, (1899).
Meas. Buchner.
Beiträge zur Chemie des Quecksilbers.
T = 25°. [Probably for all measurements. Not stated in some cases.]
 κ aq. = 1.3×10^{-6} ; not sub.
1095. H. Ley, K. Schaefer. Ber. Deutsch. Chem. Ges. 35, 1309-1316, (1902).
Beiträge zur Chemie des Quecksilbers. [Given in 1097; not quite so full here.]
[T probably 25°.] R. O.
1096. H. Ley, K. Schaefer. Ber. Deutsch. Chem. Ges. 39, 1259-1266, (1906).
Ueber Silbersalze von Säureamiden und Säureimiden. II.
T = 25°. R. O. κ aq. = 1.5×10^{-6} ; not sub.
1097. H. Ley, K. Schaefer. Zeit. Phys. Chem. 42, 690-704, (1902-1903).
Untersuchungen über die Dissociation von Schwermetallsalzen. I. Ueber Quecksilberstickstoffsalze. [Same as 1095 with a few additional measurements.]
T = 25°. R. O. κ aq. = 1.0×10^{-6} ; not sub.
1098. G. T. Lhuillier. Compt. Rend. 121, 345-348, (1895).
Sur la conductibilité des mélanges de limailles métalliques et de diélectriques.
1099. D. M. Lichty. Ann. Chemie. 319, 369-390, (1901). # *Meas. S. L. Bigelow*.
Die Geschwindigkeit der Esterbildung und die elektrische Leitfähigkeit der α -, β -, γ - und δ -Halogenfettsäuren. [See 1908.]
T = 25°. S. U.
- Meas. Lidbury; see 861.*
1100. (C. Liebenow. Zeit. Elektrochem. 8, 933-938, (1902).
Ueber die Dissociation der Elektrolyte.)
1101. (C. Liebenow. Zeit. Elektrochem. 11, 301-306, (1905).
Zur Frage der Dissociation der Elektrolyte.) [Theoretical and inorganic.]
1102. C. Liebermann. Ber. Deutsch. Chem. Ges. 23, 512-516, (1890).
Meas. W. Ostwald.
Zur Kenntnis der Isozimmtsäure. [See 1373.]
1103. C. Liebermann. Ber. Deutsch. Chem. Ges. 24, 1101-1110, (1891).
Meas. W. Ostwald.
Ueber Allozimmtsäure.
1104. C. Liebermann. Ber. Deutsch. Chem. Ges. 28, 129-134, (1895).
Meas. Paul.
Ueber Allofurfuracrylsäure.
1105. C. Liebermann. Ber. Deutsch. Chem. Ges. 36, 176-183, (1903).
Meas. W. Ostwald.
Zur Frage nach der Isozimmtsäure.
T is about 25°.
- O. Liebknecht see A. Rosenheim.
A. Liebmann see E. Lellmann.
1106. A. T. Lincoln. Jour. Phys. Chem. 3, 457-494, (1899).
The electrical conductivity of non-aqueous solutions. [Given in 1107.]
T = 25°. Hg. U.

1107. A. T. Lincoln. Trans. Wisconsin Acad. 12, II, 395-453, (1898-1899).
The electrical conductivity of non-aqueous solutions. [Part is in 941, the rest is in 1106.]
T = 25°.
A. T. Lincoln see L. Kahlenberg.
1108. L. Lindet. Compt. Rend. 138, 508-510, (1904). *Meas. Dongier?*
Sur l'inversion du sucre.
1109. C. F. Lindsay. Dis. Johns Hopkins. (1902).
A study of the conductivity of certain salts in water, methyl, ethyl and propyl alcohols, and mixtures of these solvents. [Same as 912.]
C. F. Lindsay see H. C. Jones.
1110. E. O. v. Lippmann. Ber. Deutsch. Chem. Ges. 34, 3747-3750, (1901).
Zur Inversion des Rohrzuckers. [Qualitative.]
A. Lipschitz see R. Wegscheider.
G. Lockemann see E. Beckmann.
K. Lockemann see H. Pauly, K. Schübel.
W. Lodter see E. Bamberger.
1111. M. Loeb, W. Nernst. Zeit. Phys. Chem. 2, 948-963, (1888). *Meas. W. Nernst.*
Zur Kinetik der in Lösung befindlichen Körper. II. Ueberführungszahlen und Leitvermögen einiger Silber-salze.
T = 25°. Hg. U. κ_{25} aq. = 2.5×10^{-6} ; sub.
- 1111a. W. Löb, S. Higuchi. Biochem. Zeit. 24, 92-107, (1910).
Ueber Ionenkonzentrationen in Organflüssigkeiten.
1112. (K. F. Löwe. Ann. Physik. (3), 66, 390-410, (1898).
Experimental-Untersuchung über electriche Dispersion einiger organischer Säuren, Ester, und von zehn Glassorten.) [Dielectric constants.]
1113. (K. F. Löwe. Ann. Physik. (3), 66, 582-596, (1898).
Experimental-Untersuchung über electriche Dispersion einiger organischer Säuren, Ester und von zehn Glassorten.)
1114. (R. Löwenherz. Zeit. Phys. Chem. 15, 389-398, (1894).
Ueber die Verseifungsgeschwindigkeit einiger Ester.)
1115. R. Löwenherz. Zeit. Phys. Chem. 20, 282-302, (1896).
Ueber den Einfluss des Zusatzes von Aethylalkohol auf die elektrolytische Dissociation des Wassers.
1116. R. Löwenherz. Zeit. Phys. Chem. 25, 385-418, (1898).
Bestimmung von Dissociationskonstanten durch Löslichkeitserhöhung.
T = 25°.
1117. W. Loewenstamm. Dis. Berlin. (1901).
Ueber Metallsalzverbindungen des Schwefelharnstoffs, ein Beitrag zur Kenntnis der komplexen Verbindungen einwertiger Metalle. [Same as 1524 for 25°.]
T = 25°.
W. Loewenstamm see A. Rosenheim.
1118. J. H. Long. Jour. Am. Chem. Soc. 28, 372-384, (1906).
Some investigations on salts of casein.
T = 20°.
1119. J. H. Long. Jour. Am. Chem. Soc. 29, 223-230, (1907).
On some phenomena observed in the peptic digestion of caseins.
T = 20°.
1120. J. H. Long. Jour. Am. Chem. Soc. 29, 1334-1342, (1907).
On the combining power of casein with certain acids.
T = 20°.

- 1121. J. H. Long.** Jour. Am. Chem. Soc. 30, 881-895, (1908).
Observations on the stability of lecithin.
T = 20°. x aq. not sub.
- 1122. E. H. Loomis.** Ann. Physik. (3), 60, 523-546, (1897).
Der Gefrierpunkt verdünnter wässeriger Lösungen. [Same as 1125.]
Hg. U.
- 1123. E. H. Loomis.** Ann. Physik. (3), 60, 547-551, (1897).
Ueber das spezifische Gewicht und das electrische Leitungsvermögen der Normallösungen von Natrium- und Kaliumhydroxyd, von Salzsäure, Schwefelsäure, Salpetersäure und Oxalsäure. [Same as 1124.]
T = 18° ± 0.05°. Hg. U. at 4°.
- 1124. E. H. Loomis.** Phys. Rev. 4, 252-255, (1896-1897).
On the specific gravity and electrical conductivity of the normal solutions of sodium and potassium hydroxides, and hydrochloric, sulphuric, nitric and oxalic acids. [Same as 1123.]
T = 18° ± 0.05°. Hg. U. at 4°.
- 1125. E. H. Loomis.** Phys. Rev. 4, 273-296, (1896-1897).
The freezing-points of dilute aqueous solutions. [Same as 1122.]
T = 18°. Hg. U.
- 1126. R. C. Lord.** Jour. Phys. Chem. 11, 173-200, (1907).
An investigation of the double cobalt malonates.
T = 18°. Hg. U. x_{15} aq. = 2×10^{-6} or less.
- 1127. (R. Lorenz.** Ber. Deutsch. Chem. Ges. 40, 3308-3311, (1907).
Die elektrolytische Dissoziation geschmolzener Salze.) [Inorganic.]
- 1128. (R. Lorenz.** Ber. Deutsch. Chem. Ges. 40, 4378-4380, (1907).
Die elektrolytische Dissoziation geschmolzener Salze.)
- 1128a. (R. Lorenz.** Zeit. Phys. Chem. 70, 230-238, (1910).
Ueber die Anwendung der Theorie der elektrolytischen Ionen auf die geschmolzenen Salze.) [Inorganic.]
- 1129. R. Lorenz, A. Böhl.** Zeit. Phys. Chem. 66, 733-751, (1909).
Beiträge zur Theorie der elektrolytischen Ionen. II. Die elektrolytische Dissociation des Wassers.
- 1130. (R. Lorenz, H. T. Kalmus.** Zeit. Phys. Chem. 59, 17-30, (1907).
Das Leitvermögen einiger geschmolzener Salze und über die Methode der Bestimmung desselben.) [Inorganic.]
- 1131. (R. Lorenz, F. Kaufler.** Ber. Deutsch. Chem. Ges. 41, 3727-3738, (1908).
Der Molekularzustand der geschmolzenen Salze.) [Inorganic.]
- 1132. (R. Lorenz, W. Ruckstuhl.** Zeit. Anorg. Chem. 52, 41-47, (1907).
Untersuchungen über die Wanderung der Ionen bei der Elektrolyse eines geschmolzenen Salzpaars.) [Inorganic.]
W. Lotz see H. Rupe.
" " see H. Rupe, M. Ronus.
- 1133. J. M. Lovén.** Zeit. Phys. Chem. 13, 550-560, (1894).
Ueber die Affinitätsgrößen einiger schwefelhaltigen Substitutionsderivate von der Essigsäure und der Propionsäure.
T = 25°.
- 1134. J. M. Lovén.** Zeit. Phys. Chem. 19, 456-464, (1896).
Affinitätsgrößen einiger organischen Säuren.
- 1135. (J. M. Lovén.** Zeit. Phys. Chem. 21, 134-136, (1896).
Notiz über die Trithiodilaktylsäure.) [Quoted.]
F. H. Lowe see J. C. Crocker.
T. M. Lowry see W. R. Bousfield.

1136. J. Lublin. Ber. Deutsch. Chem. Ges. 37, 3467-3469, (1904).
Dinitrile und Amylnitrit. [Qualitative.]
1137. A. Lucas. Ber. Deutsch. Chem. Ges. 32, 3179-3182, (1899). *Meas.*
F. Hofmann.
Ueber Nitroacetone.
T = 25°.
- 1137a. A. B. Luckhardt. Am. Jour. Physiol. 25, 345-353, (1909-1910).
Contributions to the physiology of lymph. X. The comparative electrical conductivity of lymph and serum of the same animal, and its bearing on theories of lymph formation.
T = 35.3°. Special unit.
1138. J. S. Lumsden. Jour. Chem. Soc. 87, 90-98, (1905).
The physical properties of heptioic, hexahydrobenzoic, and benzoic acids and their derivatives.
T = 25°.
1139. H. Lundén. Arkiv Kemi. 2, no. 11, 1-44, (1905-1907).
Ueber amphotere Elektrolyte. [Same as 1150.]
1140. (H. Lundén. Arkiv Kemi. 2, no. 18, 1-6, (1905-1907).
Bemerkungen zur Theorie der amphoteren Elektrolyte.) [Theoretical.]
1141. H. Lundén. Arkiv Kemi. 2, no. 28, 1-10, (1905-1907).
Die Kriterien der Pseudosäuren.
T = 25°. κ_{25} aq. = 1.3×10^{-6} ; not sub.
1142. H. Lundén. Jour. Biol. Chem. 4, 267-288, (1908).
Amphoteric Electrolytes. [Same as 1143.]
1143. H. Lundén. Jour. Chim. Phys. 5, 145-185, (1907).
Sur la relation entre les coefficients d'affinité et l'hydrolyse des sels des cétones isonitrosées. [Same as 1146.]
T = 15°, 25° and 40°. κ_{25} aq. = $1.1-1.6 \times 10^{-6}$; sub. as a rule.
1144. H. Lundén. Jour. Chim. Phys. 5, 574-608, (1907).
Hydrolyse des sels des acides faibles et des bases faibles et sa variation avec la température. [Same as 1147.]
T = 8° to 50°. κ_{25} aq. = $1.0-1.3 \times 10^{-6}$; sub.
1145. (H. Lundén. Jour. Chim. Phys. 6, 681-698, (1908).
Influence de la température sur l'énergie interne et l'énergie libre des dissociations électrolytiques des acides et bases faibles.) [Same as 1149.]
- 1145a. H. Lundén. Jour. Chim. Phys. 8, 331-336, (1910).
La constante de dissociation de la tropine et sa variation avec la température.
T = 10°, 25°, 50°. κ_{25} aq. = $1.0-1.4 \times 10^{-6}$; sub.
1146. H. Lundén. Med. Nobelinst. 1, no. 7, 1-38, (1906-1909).
Sur la relation, etc. [Same as 1143.]
1147. H. Lundén. Med. Nobelinst. 1, no. 8, 1-33, (1906-1909).
Hydrolyse des sels, etc. [Same as 1144.]
1148. H. Lundén. Med. Nobelinst. 1, no. 11, 1-21, (1906-1909).
Amphoteric electrolytes. [Same as 1142.]
1149. (H. Lundén. Med. Nobelinst. 1, no. 12, 1-16, (1906-1909).
Influence de la température sur l'énergie interne et l'énergie libre, etc.) [Same as 1145.]
1150. H. Lundén. Zeit. Phys. Chem. 54, 532-568, (1906).
Ueber amphotere Elektrolyte. [Same as 1139.]
T = 15° to 45°. R. O. κ_{15} aq. = $1.2-1.5 \times 10^{-6}$; not sub.
- 1150a. H. Lundén. Zeit. Phys. Chem. 70, 249-255, (1910).
Phenol and m-nitrophenol as acids.
T = 10° to 50°. R. O. κ_{25} aq. = 1.00×10^{-6} ; sub.
Meas. H. Lundén; see 524.

1151. (S. Lussana. *Nuovo Cim.* (3), 34, 217-226, (1893).
La resistenza elettrica delle soluzioni acquose e sua variazione in corrispondenza al massimo di densità.) [Inorganic. Same as 1155.]
1152. (S. Lussana. *Nuovo Cim.* (4), 5, 357-385, (1897).
Contributo allo studio della resistenza elettrica delle soluzioni, considerata come funzione della pressione e della temperatura.) [Inorganic.]
1153. (S. Lussana. *Nuovo Cim.* (4), 5, 441-459, (1897).
Contributo allo studio della resistenza elettrica delle soluzioni, considerata come funzione della pressione e della temperatura.) [Inorganic.]
1154. (S. Lussana. *Nuovo Cim.* (5), 18, 170-172, (1909).
Sull'influenza della pressione e della temperatura sulla resistenza elettrolitica.) [Correction of 1151-1153; also a priority claim; see 984.]
1155. (S. Lussana. *Atti Ist. Veneto.* 51, 1466-1481, (1892-1893).
La resistenza elettrica delle soluzioni acquose e sua variazione in corrispondenza al massimo di densità.) [Same as 1151.]
1156. O. Lutz. *Ber. Deutsch. Chem. Ges.* 35, 2460-2466, (1902).
Ueber einige Fälle von Sauerstoffwanderung in der Molekel.
T = 25°.
1157. O. Lutz. *Ber. Deutsch. Chem. Ges.* 35, 2549-2554, (1902).
Ueber die Einwirkung von Ammoniak auf halogensubstituierte Malonsäuren.
[Same as 1159.]
T = 25°.
1158. O. Lutz. *Ber. Deutsch. Chem. Ges.* 35, 4369-4377, (1902).
Ueber einige Fälle von Sauerstoffwanderung in der Molekel. II. Einwirkung von Ammoniak auf alkylsubstituierte Monobrombernsteinsäuren.
1159. O. J. Lutz. *Dis. Rostock.* (1899).
Ueber die Einwirkung von Ammoniak und Aminbasen auf Halogenbernsteinsäuren. [Same as 1157.]
Meas. P. Lux; see 1912, 1913, 1914, 1926, 1927, 1928, 1932, 1933, 1940, 1940a.
P. Lux see R. Wegscheider.
1160. R. Luzzatto, D. Filippi. *Arch. Fisiol.* 6, 250-264, (1909).
I cosiddetti composti jodotannici.
T = 18°.

M.

1161. G. W. P. van Maarseveen. *Dis. Zürich.* (1897).
Ueber die Beziehung zwischen Lösungswärme, Löslichkeit und Dissociationsgrad. [Same as 656.]
T = 25°.
Meas. G. W. P. van Maarseveen; see 656.
1162. J. Maas. *Dis. München.* (1909).
Hexarhodanatosalze des Molybdäns. [Part given in 1163.]
T = 25°.
1163. J. Maas, J. Sand. *Ber. Deutsch. Chem. Ges.* 41, 1500-1514, (1908).
Die Hexarhodanatosalze des Molybdäns. [Given in 1162. See 1164.]
T = 25°. R. O.
1164. J. Maas, J. Sand. *Ber. Deutsch. Chem. Ges.* 41, 3367-3376, (1908).
Die Hexarhodanatosalze des Molybdäns.
T = 0°. R. O.
[For a criticism of 1163 see A. Rosenheim, *Ber. Deutsch. Chem. Ges.* 41, 2386, (1908), and 42, 149, and 2295, (1909). Answered in 1164 and *Ber. Deutsch. Chem. Ges.* 42, 2642, (1909).]

1165. (J. G. MacGregor. *Phil. Mag.* (5), 41, 276-287, (1896).
On the calculation of the conductivity of mixtures of electrolytes.) [Theoretical.]
1166. (J. G. MacGregor. *Phys. Rev.* 8, 129-140, (1899).
On the applicability of the dissociation theory to the electrolysis of aqueous solutions containing two electrolytes with a common ion.) [Inorganic and theoretical.]
1167. (J. G. MacGregor. *Zeit. Phys. Chem.* 33, 529-539, (1900).
Ueber die Bestimmung der Dissociation von zusammengesetzten Lösungen von gegebener Konzentration und über das umgekehrte Problem.) [Inorganic and theoretical.]
1168. (J. G. MacGregor. *Proc. Trans. R. Soc. Canada.* (2), 2, Sect. III, 65-82, (1896).
On the calculation of the conductivity of electrolytes.) [Inorganic and theoretical.]
1169. (J. G. MacGregor. *Proc. Trans. R. Soc. Canada.* (2), 4, Sect. III, 117-148, (1898).
On the calculability of the results of electrolysis in solutions containing two electrolytes with one ion in common.) [Inorganic and theoretical.]
1170. (J. G. MacGregor. *Proc. Trans. Nova Scot.* 9, 101-119, (1894-1898).
On the calculation of the conductivity of mixtures of electrolytes.) [Inorganic and theoretical.]
1171. (J. G. MacGregor. *Proc. Trans. Nova Scot.* 10, 67-78, (1898-1902).
On finding the ionization of complex solutions of given concentration, and the converse problem.) [Inorganic and theoretical.]
1172. (J. G. MacGregor, E. H. Archibald. *Phil. Mag.* (5), 45, 151-157, (1898).
On the calculation of the conductivity of aqueous solutions containing two electrolytes with no common ion.) [Inorganic and theoretical.]
1173. (J. G. MacGregor, E. H. Archibald. *Phil. Mag.* (5), 46, 509-519, (1898).
On the conductivity method of studying moderately dilute aqueous solutions of double salts.) [Inorganic and theoretical.]
1174. A. C. MacGregory. *Ann. Physik.* (3), 51, 126-139, (1894).
Die electrische Leitfähigkeit einiger Lösungen von Salzen, besonders des Calciums, Strontiums, und Bariums. [Same as 1175.]
 $T = 18.00^\circ \pm 0.02^\circ$. Hg. U. κ aq. $= 0.75 - 1.5 \times 10^{-6}$; sub.
1175. A. C. MacGregory. *Phys. Rev.* 2, 361-372, (1894-1895).
Determination of the electric conductivity of certain salt solutions. [Same as 1174.]
- E. Mackay see H. C. Jones.
1176. G. M. J. MacKay. *Proc. Trans. Nova Scot.* 11, 324-337, (1902-1906).
Contribution to the study of hydroxylamine.
 $T = 18.00^\circ \pm 0.02^\circ$. R. O. κ aq. $= 1.05 - 1.6 \times 10^{-6}$; sub.
- W. MacPherson see H. A. Torrey.
1177. T. Madsen. *Zeit. Phys. Chem.* 36, 290-304, (1901).
Versuche über die Abhängigkeit der Hydrolyse von der Temperatur.
- T. Madsen see S. Arrhenius.
- A. Magalhães see K. Buchka.
1178. H. Mager. *Ann. Chemie.* 275, 356-366, (1893). *Meas. G. Bethmann.*
Ueber die Constitution des Suberons und über die Ringketone der Pimelinsäure und Azelaäure. [This is a chapter in an article by J. Wislicenus, pages 309-382.]

- 1179. G. Magnanini.** *Gas. Chim. Ital.* 20, 428-440, (1890).
Sul comportamento della mannite rispetto all'acido borico. [Given in **1189**. Same as **1193**.]
T = 25°.
- 1180. G. Magnanini.** *Gas. Chim. Ital.* 20, 441-447, (1890).
Sulla conducibilità elettrica delle soluzioni di acido borico in presenza di dulcite. [Same as **1195**.]
T = 25°.
- 1181. G. Magnanini.** *Gas. Chim. Ital.* 20, 448-452, (1890).
Sulla conducibilità elettrica delle soluzioni acquose di acido borico in presenza degli alcoli polivalenti.
T = 25°.
- 1182. G. Magnanini.** *Gas. Chim. Ital.* 20, 453-458, (1890).
Influenza dell'acido borico sulla conducibilità elettrica delle soluzioni acquose di acido tartarico.
- 1183. G. Magnanini.** *Gas. Chim. Ital.* 21, II, 134-141, (1891).
Sul punto di congelamento delle soluzioni acquose di acido borico e mannite.
T = 20° to 50°.
- 1184. G. Magnanini.** *Gas. Chim. Ital.* 21, II, 215-228, (1891).
Influenza dell'acido borico sulla conducibilità elettrica delle soluzioni acquose degli acidi organici.
T = 25°. λ aq. = 0.0034; not sub.
- 1185. G. Magnanini.** *Gas. Chim. Ital.* 22, I, 541-558, (1892).
Influenza dell'acido borico sulla conducibilità elettrica delle soluzioni idroalcooliche degli acidi organici.
T = 25°.
- 1186. G. Magnanini.** *Gas. Chim. Ital.* 23, I, 197-251, (1893).
Ricerche ulteriori intorno alla influenza dell'acido borico sulla conducibilità elettrica delle soluzioni acquose degli acidi organici. [Same as **1191**.]
T = 25°. λ aq. less than 0.004; not sub.
- 1187. G. Magnanini.** *Gas. Chim. Ital.* 24, I, 48-56, (1894).
Intorno alla ipotesi della colorazione degli joni. [Same as **1190** and **1196**.]
Hg. U.
- 1188. G. Magnanini.** *Gas. Chim. Ital.* 26, II, 92-96, (1896).
Intorno alla ipotesi della colorazione degli joni. [Same as **1197**.]
- 1189. G. Magnanini.** *Zeit. Phys. Chem.* 6, 58-70, (1890).
Ueber das Verhalten des Mannits gegen Borsäure. [Part is same as **1179** and **1193**.]
T = 25°.
- 1190. G. Magnanini.** *Zeit. Phys. Chem.* 12, 56-62, (1893).
Ueber die Hypothese der Farben der Ionen. [Same as **1187** and **1196**.]
T for potassium salt is 18°. Hg. U.
- 1191. G. Magnanini.** *Atti Accad. Gioenia.* (4), 5, Mem. III, 1-51, (1892-1893).
Ricerche ulteriori, etc. [Same as **1186**.]
- 1192. G. Magnanini.** *Mem. R. Accad. Modena.* (2), 11, 259-270, (1895).
Dissociazione elettrolitica e colorazione.
T = 25°.
- 1193. G. Magnanini.** *Rend. Accad. Lincei.* (4), 6, I, 260-266, (1890).
Sul comportamento della mannite rispetto all'acido borico. [Same as **1179**. Given in **1189**.]
- 1194. (G. Magnanini.)** *Rend. Accad. Lincei.* (4), 6, I, 411-416, (1890).
Sulla conducibilità elettrica delle soluzioni acquose di acido borico in presenza di mannite.) [Theoretical and quoted.]

- 1195. G. Magnanini.** Rend. Accad. Lincei. (4), 6, I, 457-463, (1890).
Sulla conducibilità elettrica delle soluzioni di acido bórico in presenza di dulcitate. [Same as 1180.]
- 1196. G. Magnanini.** Rend. Accad. Lincei. (5), 2, I, 369-376, (1893).
Intorno alla ipotesi della colorazione degli joni. [Same as 1187 and 1190.]
- 1197. G. Magnanini.** Rend. Accad. Lincei. (5), 4, II, 60-63, (1895).
Intorno alla ipotesi della colorazione degli joni. [Same as 1188.]
- Meas.* G. Magnanini; see 557.
- 1198. G. Magnanini, T. Bentivoglio.** Gaz. Chim. Ital. 23, II, 444-451, (1893).
Intorno allo spettro di assorbimento delle soluzioni di alcuni cromocossalati della serie bleu. [Same as 1200.]
T = 25°. Hg. U.
- 1199. G. Magnanini, T. Bentivoglio.** Gaz. Chim. Ital. 23, II, 451-457, (1893).
Conducibilità elettrica delle soluzioni dei sali di acidi organici in presenza di acido bórico. [Same as 1201.]
- 1200. G. Magnanini, T. Bentivoglio.** Rend. Accad. Lincei. (5), 2, II, 17-23, (1893).
Intorno allo spettro di assorbimento, etc. [Same as 1198.]
- 1201. G. Magnanini, T. Bentivoglio.** Rend. Accad. Lincei. (5), 2, II, 54-58, (1893).
Conducibilità elettrica delle soluzioni dei sali, etc. [Same as 1199.]
- 1202. G. Magnanini, M. Scheidt.** Gaz. Chim. Ital. 22, I, 436-448, (1892).
Sul comportamento dell'acido deidrodiacetillevulinico rispetto alla fenilidrazina ed alla idrossilamina e sopra un nuovo derivato dell'acido deidrodiacetillevulinico. [Same as 1203.]
- 1203. G. Magnanini, M. Scheidt.** Rend. Accad. Lincei. (5), 1, I, 169-174, (1892).
Sul comportamento, etc. [Same as 1202.]
Meas. Magnus; see 332.
- 1204. (G. Magri.)** Rend. Accad. Lincei. (5), 16, I, 171-178, (1907).
Ricerche sopra solventi inorganici a basse temperature. Disposizione sperimentale.)
- 1205. (G. Magri.)** Rend. Accad. Lincei. (5), 16, I, 518-525, (1907).
Ricerche sopra il solvente H₂S liquefatto.) [Inorganic.]
T = -60°.
G. Magri see U. Antony.
E. G. Mahin see H. C. Jones.
R. D. Mailey see H. M. Goodwin.
- 1206. L. Malciès.** Ann. Chim. Phys. (8), 16, 153-236, (1909).
Recherches expérimentales sur les diélectriques.
- 1207. G. Malfitano.** Compt. Rend. 139, 1221-1223, (1904).
Sur la conductibilité électrique des solutions colloïdales.
- 1208. (G. Malfitano.)** Compt. Rend. 148, 1045-1047, (1909).
Sur les propriétés physico-chimiques des particules colloïdales dites micelles.)
- 1209. G. Malfitano, L. Michel.** Compt. Rend. 146, 338-341, (1908).
Sur l'hydrolyse du perchlorure de fer. Effet de la valence des ions négatifs.
T = 50°.
- 1209a. G. Malfitano, A. N. Moschkoff.** Compt. Rend. 151, 817-819, (1910).
Sur la purification de l'amidon.

- 1210.** (R. Malmström. *Ann. Physik.* (4), 18, 413-449, (1905).
Versuch einer Theorie der elektrolytischen Dissoziation unter Berücksichtigung der elektrischen Energie.) [Theoretical and inorganic.]
Meas. R. Malmström; see 828, 831.
- 1211.** M. E. Maltby. *Zeit. Phys. Chem.* 18, 133-158, (1895).
Methode zur Bestimmung grosser elektrolytischer Widerstände.
- 1212.** O. Manasse, H. Rupe. *Ber. Deutsch. Chem. Ges.* 27, 1818-1822, (1894). *Meas.* Franke and Paul.
Ueber die Oxydation des Menthons.
Mandalà see Oliveri-Mandalà.
- 1213.** W. Manthey. *Ber. Deutsch. Chem. Ges.* 33, 3081-3086, (1900).
Ueber die Condensation der α -Bromallozimmtsäure. [Same as 1214.]
 $T = 25^\circ$. κ aq. $= 8 \times 10^{-6}$.
- 1214.** W. Manthey. *Dis. Berlin.* (1900).
Ueber die Kondensation von α -Bromallozimmtsäure, sowie über die Konstitution des Truxons und seiner Derivate. [Same as 1213.]
- 1215.** L. Marcilly. *Bul. Soc. Chim.* (3), 31, 119-130, (1904).
Sur l'acide oxypivalique. [Same as 1216.]
 $T = 25^\circ$.
- 1216.** L. Marcilly. *Dis. Nancy.* (1903).
Etude des acides $\alpha\alpha$ -Dialcoylhydracryliques. [Same as 1215.]
Meas. G. Mariasz; see 291.
Markownikoff see Markownikoff.
- 1217.** W. Markownikoff. *Jour. Prakt. Chem.* (2), 49, 409-444, (1894).
Meas. N. Zelinsky.
Untersuchung des Suberons. [Same as 1218 and 1219 together. Zelinsky's measurement is really quoted from 2018.]
- 1218.** (W. Markownikoff. *Jour. Russ. Phys.-chem. Soc.* 25, 364-378, (1893).
Investigation of suberone.) [Same as part of 1217.]
- 1219.** W. Markownikoff. *Jour. Russ. Phys.-chem. Soc.* 25, 547-564, (1893).
Investigation of suberone. [Same as part of 1217. Zelinsky is quoted from 2018.]
- 1220.** C. J. Martin, O. Masson. *Jour. Chem. Soc.* 79, 707-714, (1901).
The influence of cane sugar on the conductivities of solutions of potassium chloride, hydrogen chloride, and potassium hydroxide, with evidence of salt formation in the last case.
 $T = 18^\circ$. R. O.
N. A. Martin see H. W. Foote.
E. Mascetti see A. Miolati.
O. Masson see C. J. Martin.
- 1221.** (P. Massoulier. *Compt. Rend.* 130, 773-775, (1900).
Relations entre la conductibilité électrolytique et le frottement interne dans les solutions salines.) [Inorganic.]
- 1222.** P. Massoulier. *Compt. Rend.* 143, 218-220, (1906).
Sur la relation qui existe entre la résistance électrique et la viscosité des solutions électrolytiques.
 $T = 0^\circ$ and 25° .
Master = McMaster, q. v.
- 1223.** J. H. Mathews. *Jour. Phys. Chem.* 9, 641-681, (1905).
On the relation between electrolytic conduction, specific inductive capacity and chemical activity of certain liquids (with a bibliography of dielectric constants).
 $T = 25^\circ$.
W. C. Matignon see M. Berthelot.
K. Mattisson see B. Holmberg.

1224. P. Mauz. Dis. Tübingen. (1904).
 Physikalisch-chemische Untersuchungen über Alkaloide.
 T = 18°. R. O. \times aq. sub.; Δ also given without sub. of aq.
 % Meas. P. Mauz; see 1391a.
1225. A. Mayer. Compt. Rend. 143, 515-516, (1906).
 Sur les complexes de l'albumine pure.
- 1225a. A. Mayer, G. Schaeffer. Arch. Fisiol. 7, 457-489, (1909).
 Contribution à l'étude des acidalbumines, particulièrement des acidalbumines d'acides gras.
- 1225b. H. Mayer. Jour. Phys. (4), 9, 584-599, (1910).
 Nouvelle méthode électrique pour mesurer l'influence de la lumière sur la chromogélatine.
- 1225c. H. Mayer. Zeit. Chem. Ind. Kolloide. Beiheft I, 58-90, (1909-1910).
 Ueber eine elektrische Methode zur Messung der durch Belichtung in Chromatgelatineschichten verursachten Veränderungen.
 T = 20°.
1226. H. Mayer. Zeit. Phys. Chem. 66, 33-70, (1909).
 Ueber eine elektrische Methode zur Messung der durch Belichtung in Chromatgelatineschichten verursachten Veränderungen.
 T = 20° to 30°.
1227. A. Mazzucchelli. Rend. Soc. Chim. Roma. 3, 80-96, (1905).
 Sopra la cosiddetta "regola di valenza" dei sali polibasici.
 T = 25° and 28°. R. O.
1228. A. Mazzucchelli. Rend. Soc. Chim. Roma. 6, 344-346, (1908).
 Sulle curve di neutralizzazione graduale degli acidi. [Priority claim; and criticism of 1718.]
1229. (J. W. McBain. Proc. Washington Acad. 9, 1-78, (1907).
 The experimental data of the quantitative measurements of electrolytic migration. To the end of the year 1905.) [Gives a critical bibliography, with tables of experimental values found by each author.]
- 1229a. J. W. McBain, M. Taylor. Ber. Deutsch. Chem. Ges. 43, 321-322, (1910).
 Ueber die elektrische Leitfähigkeit von Seifenlösungen.
 T = 89.75°.
1230. H. N. McCoy. Am. Chem. Jour. 31, 503-521, (1904).
 On the ionization constants of phenolphthalein and the use of this body as an indicator.
1231. H. N. McCoy. Jour. Am. Chem. Soc. 30, 688-694, (1908).
 Two new methods for the determination of the secondary ionization constants of dibasic acids.
 T = 20°.
1232. (H. N. McCoy. Jour. Am. Chem. Soc. 30, 1074-1077, (1908).
 The relation between the ionizing power and the dielectric constants of solvents.)
1233. W. McCracken. Am. Chem. Jour. 39, 586-613, (1908).
 Studies in catalysis. The catalysis of imidoesters. [k same as in part of 1656 and 1657.]
 T = 25° \pm 0.01°. R. O. \times aq. = 4×10^{-6} ; sub. for neutral solutions, but not for acid solutions.
 Meas. W. McCracken; see 1657.
- 1233a. D. McIntosh. Jour. Am. Chem. Soc. 32, 542-547, (1910).
 The basic properties of oxygen: compounds of dimethylpyrone and the halogen hydrides.
 T = -100° and -78°.

- 1234.** D. McIntosh. Jour. Phys. Chem. 11, 306-317, (1907).
The physical properties of liquid and solid acetylene.
- 1235.** (D. McIntosh. Phil. Mag. (5), 41, 510-516, (1896).
On the calculation of the conductivity of mixtures of electrolytes having a common ion.) [Same as **1236**. Inorganic and theoretical.]
- 1236.** (D. McIntosh. Proc. Trans. Nova Scot. 9, 120-133, (1894-1898).
On the calculation, etc.) [Same as **1235**.]
D. McIntosh see E. H. Archibald.
" " see F. M. G. Johnson.
" " see B. D. Steele.
" " see J. W. Walker.
- 1237.** D. McIntosh, B. D. Steele. Proc. R. Soc. London. 73, 450-453, (1904).
On the liquefied hydrides of phosphorus, sulphur, and the halogens as conducting solvents. [Qualitative.]
- 1238.** The reference under this number has been omitted intentionally.
- 1239.** A. McKenzie. Jour. Chem. Soc. 75, 753-770, (1899). *Meas. W.*
[A.] Roth.
- Active and inactive phenylalkoxyacetic acids.
T = 25°. Hg. U.
Meas. L. McMaster; see 904.
L. McMaster see H. C. Jones.
" " see H. C. Jones, E. C. Bingham.
G. Mehrtens see M. Busch.
A. C. Melcher see A. A. Noyes.
- 1239a.** J. Mellanby. Jour. Physiol. 35, 473-499, (1906-1907).
The physical properties of horse serum.
T = 20° to 70°.
- 1239b.** J. Mellanby. Jour. Physiol. 36, 288-333, (1907-1908).
The precipitation of the proteins of horse serum.
- 1240.** J. W. Mellor. Jour. Chem. Soc. 79, 126-134, (1901).
Some α -alkyl substitution products of glutaric, adipic, and pimelic acids.
T is about 24°.
- 1241.** R. H. Mennicke. Dis. Leipzig. [Probably 1897].
Ueber fraktionirte Fällung organischer Basen. [The accuracy of the values given is doubtful.]
T = 25°. S. U. κ aq. = $0.7-1.5 \times 10^{-6}$; not sub.
- 1242.** (N. Menschutkin. Zeit. Phys. Chem. 6, 41-57, (1890).
Ueber die Affinitätskoeffizienten der Alkylhaloide und der Amine.) [Velocity of reaction in organic solvents.]
E. Merritt. Phys. Rev. 27, 367-399, (1908). See E. L. Nichols, E. Merritt.
E. Merritt see E. L. Nichols.
- 1243.** P. H. v. d. Meulen. Rec. Trav. Chim. 15, 323-348, (1896).
L'action des alcools sur les isoimides. [Full tables of Λ in **1244**. Only k is given here.]
T = 25°.
- 1244.** P. H. v. d. Meulen. Dis. Basel. (1896).
Zur Kenntniss einiger Derivate der Camphersäure und Hemipinsäure. [Has full tables of Λ , otherwise same as **1243**.]
T = 25°.
- 1245.** W. Meusel. Dis. Halle. (1900).
Ueber Acetphenylglycin-o-carbonsäure. [Part given in **1813**, **1814** and **1817**.]
T = 25.0°. R. O. κ aq. = $2.3-3.0 \times 10^{-6}$.
Meas. W. Meusel; see **1813**.

- F. v. Meyenburg see K. Auwers, E. Kőbner.
1246. H. Meyer. *Monatsh.* 28, 1231-1237, (1907). *Meas. Flaschner.*
Die Konstitutionsbestimmung der isomeren Orthoketonsäurederivate. [Same as 1247.]
1247. H. Meyer. *Sitzber. Akad. Wien.* 116, 2b, 1137-1143, (1907). *Meas. Flaschner.*
Die Konstitutionsbestimmung, etc. [Same as 1246.]
1248. J. Meyer. *Ber. Deutsch. Chem. Ges.* 36, 3599-3601, (1903).
Zur Kenntniss der Citronensäure.
T = 25°.
1249. J. Meyer. *Zeit. Elektrochem.* 13, 494-506, (1907).
Zur Kenntnis der umkehrbaren Reaktionen erster Ordnung.
T is about 25.0°.
1250. K. H. Meyer. *Dis. Leipzig.* (1907).
Untersuchungen über Halochromie. [Most is given in 767a, the rest is same as 1251.]
T = 25°. R. O.
K. H. Meyer see A. Hantzsch.
1251. K. H. Meyer, A. Hantzsch. *Ber. Deutsch. Chem. Ges.* 40, 3479-3488, (1907).
Ueber die Halochromie des Phenolphthaleins und seiner Ester. [Given in 1250.]
T = 25°. R. O.
V. Meyer see P. Askenasy.
V. J. Meyer see A. Rosenheim.
Meas. W. Meyerhoffer; see 1907, 1921.
1252. O. Mezger. *Dis. Tübingen.* (1902).
Beiträge zur Kenntnis des Hämatins. [Same as 1033.]
T = 25°.
Meas. O. Mezger; see 1030, 1033.
1253. (A. Michael, R. F. Brunel. *Am. Chem. Jour.* 41, 118-148, (1909).
On the relative ease of addition in the alkene group.)
1254. A. Michael, O. D. E. Bunge. *Ber. Deutsch. Chem. Ges.* 41, 2907-2913, (1908).
Ueber den stereochemischen Verlauf der Addition von Chlor zu Crotonsäure.
 α aq. = 0.6×10^{-4} .
1255. (A. Michael, H. Hibbert. *Ber. Deutsch. Chem. Ges.* 41, 1080-1091, (1908).
Ueber die vermeintliche Beziehung zwischen Dielektrizitätskonstante und isomerisierender Kraft organischer Lösungsmittel bei Enol-Keton-Desmotropen.)
1256. A. Michaelis. *Ann. Chemie.* 339, 117-193, (1905). *Meas. Blume.*
Ueber 5-Aminopyrazole und über Iminopyrine. [Same as 214.]
1257. (A. Michaelis, E. Hepner. *Ber. Deutsch. Chem. Ges.* 36, 3271-3279, (1903).
Ueber Anilopyrin und Phenyl-methyl-anilino-pyrazol.)
1258. L. Michaelis. *Biochem. Zeit.* 19, 181-185, (1909).
Die elektrische Ladung des Serumalbumins und der Fermente.
L. Michaelis see P. Rona.
- 1258a. L. Michaelis, H. Davidsohn. *Biochem. Zeit.* 28, 1-6, (1910).
Die isoelektrische Konstante des Pepsins.
- 1258b. L. Michaelis, B. Mostynski. *Biochem. Zeit.* 24, 79-91, (1910).
Die isoelektrische Konstante und die relative Aciditätskonstante des Serumalbumins.
T = 18°. $k_w = 0.60 \times 10^{-14}$ at 18°.

- 1258c.** L. Michaelis, B. Mostynski. *Biochem. Zeit.* 25, 401–410, (1910).
Die innere Reibung von Albuminlösungen. [See criticism by Pauli, Wagner, *Biochem. Zeit.* 27, 296, and reply by Michaelis, *Biochem. Zeit.* 28, 353.]
- 1259.** L. Michaelis, P. Rona. *Biochem. Zeit.* 18, 317–339, (1909).
Elektrochemische Alkalinitätsmessungen an Blut und Serum.
T = 10° to 40°.
- 1259a.** L. Michaelis, P. Rona. *Biochem. Zeit.* 23, 61–67, (1909–1910).
Der Einfluss der Neutralsalze auf die Indikatoren.
- 1259b.** L. Michaelis, P. Rona. *Biochem. Zeit.* 23, 364–369, (1909–1910).
Beiträge zur Frage der Glykolyse. I. Die Alkaliempfindlichkeit des Traubenzuckers.
- 1259c.** L. Michaelis, P. Rona. *Biochem. Zeit.* 27, 38–52, (1910).
Beiträge zur allgemeinen Eiweisschemie. I. Die Koagulation des denaturierten Albumins als Funktion der Wasserstoffionenkonzentration und der Salze.
- 1260.** L. Michaelis, P. Rona. *Zeit. Elektrochem.* 14, 251–253, (1908).
Zur Frage der Bestimmung der H⁺-Ionenkonzentration durch Indikatoren.
- 1261.** J. I. Michajlenko. *Jour. Russ. Phys.-chem. Soc.* 30, 466–475, (1898).
Action of zinc on a mixture of bromoisobutyric ether and formic ether.
T = 25°.
Meas. J. I. Michajlenko; see 1475.
- 1262.** J. I. Michajlenko, W. P. Javorskij. *Jour. Russ. Phys.-chem. Soc.* 32, 328–346, (1900).
Action of zinc on a mixture of bromoisobutyric ether and formic ether.
T = 25°.
L. Michel see G. Malfitano.
- 1262a.** (G. Mie. *Ann. Physik.* (4), 33, 381–399, (1910).
Hydratisierung und Molekularwärme der Ionen in sehr verdünnten wässrigen Lösungen.) [Inorganic.]
A. Milesi see L. Francesconi.
- 1263.** A. Minozzi. *Gaz. Chim. Ital.* 29, I, 421–439, (1899).
Sopra l'affinità fra alcuni acidi ed alcune basi in alcool metilico.
[T probably 25°.]
- 1264.** N. Mintz. *Dis. Leipzig.* (1891). *Meas.* [P.] Walden.
Ueber Aethylmethylbernsteinsäure und symmetrische Aethylmethylglutarsäuren.
N. Mintz see C. A. Bischoff.
- 1265.** A. Miolati. *Ber. Deutsch. Chem. Ges.* 26, 1788–1790, (1893).
Zur Kenntniss des Parafuchsins. [Same as 1267.]
T = 25°.
- 1266.** A. Miolati. *Ber. Deutsch. Chem. Ges.* 28, 1696–1701, (1895).
Ueber die Constitution der Fuchsine. [Same as 1268 with abridged text.]
- 1267.** A. Miolati. *Gaz. Chim. Ital.* 23, II, 18–21, (1893).
Sulla costituzione della parafucsina. [Same as 1265.]
T = 25°. S. U.
- 1268.** A. Miolati. *Gaz. Chim. Ital.* 25, II, 217–232, (1895).
Sulla costituzione delle fucsine. [Same as 1266.]
T = 25°.
- 1269.** A. Miolati, (R. Pizzighelli). *Jour. Prakt. Chem.* (2), 77, 417–456, (1908).
Zur Kenntnis der komplexen Säuren. I. Ueber die Leitfähigkeit von molybdänsäurehaltigen Gemischen.
T = 25°. κ aq. very small; not sub.
Meas. A. Miolati; see 559, 883.
A. Miolati see A. Hantzsch.
“ “ see A. Werner.

- 1270. A. Miolati, I. Bellucci.** *Zeit. Anorg. Chem.* 26, 209-221, (1901).
Ueber die Pentachlorplatinsäure.
T = 25°. R. O.
- 1271. (A. Miolati, E. Mascetti.** *Gaz. Chim. Ital.* 31, I, 93-139, (1901).
Contributo alla conoscenza di alcuni acidi inorganici.) [Inorganic.]
- 1272. A. Mittasch.** *Zeit. Phys. Chem.* 46, 37-42, (1903).
Einige Beobachtungen über Lösungsvermögen und elektrische Leitfähigkeit von flüssigem Nickelkohlenoxyd.
T = 0°; for qualitative measurements = -20° to +20°.
- 1273. J. A. Mjösen.** *Ber. Deutsch. Chem. Ges.* 30, 1227-1240, (1897).
Ueber die Polymethacrylsäure. [Same as 1274.]
T = 25°.
- 1274. J. A. Mjösen.** *Dis. Leipzig.* (1894).
Ueber die Polymethacrylsäure. [Same as 1273.]
- 1275. M. Moest.** *Dis. Basel.* (1899).
Ueber die elektrische Leitfähigkeit von Oxychinonen und Salzen derselben.
T = 25°. S. U. κ aq. not over 1×10^{-6} .
- 1276. P. B. Mojofu.** *Dis. Lausanne.* (1909).
I. Détermination des poids moléculaires a l'état liquide. II. Dosage et séparation par conductivité électrique des halogènes et des métaux alcalino-terreux.
Monte = DaMonte, q. v.
Meas. Montemartini; see 76.
- 1277. (V. Monti.** *Nuovo Cim.* (3), 35, 75-81, (1894).
Sulla relazione fra la conducibilità elettrica e l'attrito interno degli elettroliti.) [Inorganic. An abstract, with data, of 1278.]
- 1278. (V. Monti.** *Atti Accad. Torino*, 28, 476-487, (1892-1893).
Sulla relazione fra la conducibilità elettrica e l'attrito interno degli elettroliti.) [Inorganic.]
- 1279. V. Monti.** *Atti Ist. Veneto.* 50, 1705-1714, (1891-1892).
Sulle conducibilità molecolari di alcuni sali alcalini disciolti in mescolanze d'acqua e glicerina.
T = 18°. Hg. U.
- 1280. V. Monti.** *Atti Ist. Veneto.* 51, 1482-1488, (1892-1893).
Di alcuni casi anomali di dissociazione elettrolitica.
T = 18°.
- 1281. (B. E. Moore.** *Phys. Rev.* 3, 321-334, (1895-1896).
On the viscosity of certain salt solutions.) [Quoted.]
- 1282. (T. S. Moore.** *Jour. Chem. Soc.* 91, 1373-1378, (1907).
A method for the determination of the equilibrium in aqueous solutions of amines, pseudo-acids and -bases, and lactones.) [Theoretical. Abstract in 1284.]
- 1283. T. S. Moore.** *Jour. Chem. Soc.* 91, 1379-1384, (1907).
The "true" ionisation constants and the hydration constants of piperidine, ammonia, and triethylamine. [Abstract in 1285.]
- 1284. (T. S. Moore.** *Proc. Chem. Soc.* 23, 154, (1907).
A method for the determination, etc.) [An abstract of 1282.]
- 1285. T. S. Moore.** *Proc. Chem. Soc.* 23, 154, (1907).
The "true" ionisation constants, etc. [An abstract of 1283, with data.]
T. S. Moore see N. V. Sidgwick.
- 1286. A. Morello.** *Gaz. Chim. Ital.* 30, I, 257-264, (1900).
Energia di alcuni acidi sciolti in miscugli di solventi organici ed acqua.
T = 25°.

- 1287.** J. L. R. Morgan. *Zeit. Phys. Chem.* 17, 513-535, (1895).
Die Bestimmung von Cyanionen auf elektrometrischem Wege. [Same as 1288.]
T = 17.5° to 19°.
- 1288.** J. L. R. Morgan. *Dis. Leipzig.* (1895).
Die Bestimmung von Cyanionen auf elektrometrischem Wege. [Same as 1287.]
- 1289.** (J. L. R. Morgan, C. W. Kanolt. *Jour. Am. Chem. Soc.* 28, 572-588, (1906).
The combination of a solvent with the ions.)
- 1289a.** G. Moruzzi. *Biochem. Zeit.* 22, 232-243, (1909).
Untersuchungen über die Gelatinierung des Eiweisses.
T = 25°.
- 1289b.** G. Moruzzi. *Biochem. Zeit.* 28, 97-105, (1910).
Ueber die Aenderungen der durch Harnstoff in eiweisshaltigen Flüssigkeiten hervorgerufenen inneren Reibung und elektrischen Leitfähigkeit.
T = 25°.
- A. N. Moschkoff see G. Malfitano.
B. Mostynski see L. Michaelis.
W. R. Mott see H. E. Patten.
- 1290.** (P. F. Mottelay. *Trans. Am. Electrochem. Soc.* 13, 453-479, (1908).
Bibliography of electrochemistry and allied subjects.)
- 1291.** B. Mühlhauser. *Dis. Basel.* (1902).
A. Ueber Untersuchungen in der Acridinreihe. B. Zur Kenntniss der α -Acetylglutarsäure. [Same as 568 for k; gives also tables of A.]
T = 25°. R. O.
B. Mühlhauser see F. Fichter.
- 1292.** H. Müller. *Dis. Basel.* (1905).
Die Reduktionsprodukte des 2,4-Dinitrorhodanbenzols. Affinitätsmessungen an einbasischen Fettsäuren. [Same as 569. No details of conductivity measurements are given here, but measurements of saponification are given in full.]
- H. Müller see F. Fichter.
Meas. N. L. Müller; see 316, 317, 1915, 1929.
P. Müller see A. Rosenheim.
- 1292a.** W. J. Müller. *Ber. Deutsch. Chem. Ges.* 43, 2609-2613, (1910).
Ueber die Geschwindigkeiten der Umlagerung von Oxoniumbasen, Farbbasen und -cyaniden in die Carbinolbasen und Leukocyanide. [Given in 956a.]
T = 0°.
- Meas.* W. J. Müller; see 958a.
- 1293.** M. Mündler. *Dis. Heidelberg.* (1901).
Ueber Aminolyse. [Part of these measurements is given in 660.]
T = 25°.
- Meas.* M. Mündler; see 660.
- 1294.** P. T. Muller. *Bul. Soc. Chim.* (3), 17, 390, (1897).
[An abstract with no title. Measurements given in full in 1295.]
- 1295.** P. T. Muller. *Bul. Soc. Chim.* (3), 27, 1011-1014, (1902).
Études physico-chimiques sur la fonction acide oximidée. (I). Conductibilité électrique des éthers oximidocyanacétiques. [Abstract given in 1294.]
T = 25°. R. O.
- 1296.** P. T. Muller, E. Bauer. *Jour. Chim. Phys.* 2, 472-497, (1904).
Détermination de la chaleur de dissociation de quelques acides isonitrosés (pseudo-acides) par la méthode des conductibilités.
T = 0° to 40°. κ_{25} aq. = 1.24×10^{-6} ; not sub. for acids, sub. for salts.

- 1297.** P. T. Muller, M. Paul. *Bul. Soc. Chim.* (3), 35, 197-198, (1906).
[An abstract with no title. Measurements given in full in 1290.]
T = 25° and 35°.
- 1298.** S. P. Mulliken. *Am. Chem. Jour.* 15, 523-533, (1893).
A new class of organic electrosyntheses.
- 1299.** S. P. Mulliken. *Dis. Leipzig.* (1890).
Ueber die Konstitution der Chlorsimmsäuren. [Quoted in 1683.]
- 1300.** O. Mumm. *Zeit. Phys. Chem.* 62, 589-600, (1908).
Die Kinetik des Diazoessigesters und das Verdünnungsgesetz.
- 1301.** E. Mumme. *Dis. Halle.* (1901).
Ueber die Einwirkung von Chloressigsäure auf Anthranilsäure. [Qualitative.
Same as 1817. See 1245 for measurements.]
Meas. E. Mumme; see 1815.
E. Mumme see D. Vorländer.
F. Mylius see F. Kohlrausch.

N.

- 1302.** R. Nasini, T. Costa. *Gas. Chim. Ital.* 21, I, 554-565, (1891).
Ricerche sopra i derivati solfinici e loro confronto con le combinazioni degli ammonii organici. [Same as 1304.]
- 1303.** (R. Nasini, T. Costa. *Rend. Accad. Lincei*, (4), 6, II, 284-291, (1890).
Sul potere rifrangente di alcuni derivati della trietilsolfina.) [No conductivity.]
- 1304.** R. Nasini, T. Costa. *Rend. Accad. Lincei*, (4), 7, I, 623-631, (1891).
Ricerche sopra i derivati solfinici, etc. [Same as 1302.]
- 1305.** R. Nasini, A. Pezzolato. *Gas. Chim. Ital.* 23, I, 43-58, (1893).
Spostamento della nicotina dai suoi sali e azione dell'alcool sopra di essi.
[Same as 1306 and 1307.]
T = 25°.
- 1306.** R. Nasini, A. Pezzolato. *Zeit. Phys. Chem.* 12, 501-504, (1893).
Die Verdrängung des Nikotins aus seinen Salzen und die Wirkung des Alkohols auf dieselben. [Same as 1305 and 1307.]
T = 25°.
- 1307.** R. Nasini, A. Pezzolato. *Rend. Accad. Lincei*, (5), 1, II, 332-343, (1892).
Spostamento della nicotina dai suoi sali, etc. [Same as 1305 and 1306.]
- 1308.** (A. Naumann. *Ber. Deutsch. Chem. Ges.* 32, 999-1004, (1899).
Ueber Reactionen in nichtwässrigen Lösungsmitteln.)
- 1309.** (A. Naumann, A. Rücker. *Jour. Prakt. Chem.* (2), 74, 209-217, (1906).
Seitherige Verfahren zur Bestimmung der Hydrolyse.) [Bibliography of methods of determining hydrolysis.]
- 1309a.** R. Naumann. *Zeit. Elektrochem.* 16, 772-778, (1910).
Ueber die Hydrolyse des Cyans.
T = 0° and 18°. R. O.
- 1310.** (J. U. Nef. *Ann. Chemie.* 270, 267-335, (1892).
Ueber das zweiwerthige Kohlenstoffatom.) [Quoted.]
F. Neger see H. v. Pechmann.
- 1311.** Negreano. *Compt. Rend.* 106, 1665-1668, (1888).
Mesure de la vitesse d'éthérification à l'aide des conductibilités électriques. [Qualitative.]
C. Neizert see E. Rimbach.

- 1312.** (P. Nell. *Ann. Physik.* (4), 18, 323-347, (1905).
Studien über Diffusionsvorgänge wässeriger Lösungen in Gelatine.) [Inorganic.]
- 1313.** V. V. Neminskij, W. A. Plotnikow. *Jour. Russ. Phys.-chem. Soc.* 40, 337, (1908).
The electrolysis of compounds of aluminum bromide with toluene and benzene. [Summary of 1314.]
- 1314.** V. V. Neminskij, W. A. Plotnikow. *Jour. Russ. Phys.-chem. Soc.* 40, 391-396, (1908).
The electrolysis of compounds of aluminum bromide with toluene and benzene. [Summary given in 1313.]
T = 18°. R. O.
- 1315.** W. Nernst. *Zeit. Phys. Chem.* 14, 155-156, (1894).
Zur Dissociation des Wassers.
T = 18°.
- 1316.** W. Nernst. *Zeit. Phys. Chem.* 14, 622-663, (1894).
Methode zur Bestimmung von Dielektrizitätskonstanten.
Meas. W. Nernst; see 303, 1111.
W. Nernst see M. Loeb.
- 1317.** W. Nernst, C. Hohmann. *Zeit. Phys. Chem.* 11, 352-390, (1893).
Bildung der Amylester aus Säuren und Amylen.
T = 18.5°.
- 1318.** W. Neumann. *Zeit. Physiol. Chem.* 45, 216-251, (1905).
Ueber Peptone. [Same as 1319.]
R. O.
- 1319.** W. Neumann. *Dis. Leipzig.* (1905).
Ueber Peptone. [Same as 1318.]
- 1320.** E. L. Nichols, E. Merritt. *Phys. Rev.* 18, 447-449, (1904).
The effect of light upon the absorption and the electrical conductivity of fluorescent solutions. [Same as 1321. The text is abridged.]
- 1321.** E. L. Nichols, E. Merritt. *Phys. Rev.* 19, 396-421, (1904).
Studies of luminescence. IV. The influence of light upon the absorption and electrical conductivity of fluorescent solutions. [Same as 1320.]
- 1322.** (E. L. Nichols, E. Merritt. *Phys. Rev.* 27, 367-399, (1908).
[This article is by Merritt alone, though both names are given.]
Studies in luminescence. Nichols and Merritt. X. The phenomena of phosphorescence considered from the standpoint of the dissociation theory.)
- 1323.** M. Nicollier. *Dis. Lausanne.* (1907).
Conductibilités limites de 2 électrolytes binaires dans quelques dissolvants organiques.
T = 25°. S. U.
- 1324.** M. Nicollier, P. Dutoit. *Bul. Soc. Vaudoise. Compt. Rend. April* (1906). II.
Variation de conductibilité des solutions d'iodures et bromures alcalins dans les dissolvants organiques, sous l'influence de la lumière. [Same as 1325.]
- 1325.** M. Nicollier, P. Dutoit. *Bul. Soc. Vaudoise. Proc. Verb.* 42, VI, (1905-1906).
Variation de conductibilité, etc. [Same as 1324.]
Meas. Nicolosi; see 253.
- 1326.** F. Nicolosi-Roncati. *Rend. Accad. Scienc. (Napoli).* (3^a), 13, 357-364, (1907).
Ricerche su la conduttività elettrica e la pressione osmotica nei vegetali.
T = 25° to 28°.

1327. S. v. Niementowski, J. v. Roszkowski. *Zeit. Phys. Chem.* 22, 145-169, (1897).
 Ueber die Diazotierung des Anilins.
 $T = 25^{\circ}$.
1328. (S. Niementowski, J. Roszkowski. *Bul. Acad. Cracov.* (1896), 324-325.
 Ueber die Diazotierung des Anilins.) [An abstract. No data. See 1327 for measurements.]
 S. Nirdlinger see S. F. Acree.
 O. Nützel see E. Deussen, G. Heller.
1329. J. F. Norris. *Am. Chem. Jour.* 38, 627-642, (1907).
 On the base-forming property of carbon.
1330. V. Novák. *Phil. Mag.* (5), 44, 9-20, (1897).
 Specific electric conductivities and freezing-points of solutions of water in formic acid.
 $T = 8.52^{\circ}$. Hg. U.
1331. A. Nowizki. *Dis. Heidelberg.* (1898).
 Ueber den Einfluss der Temperatur auf die Zurückdrängung der Löslichkeit schwer löslicher Salze durch Zusatz eines gleichionigen Elektrolyten.
 $T = 25^{\circ}$ and 35° . Hg. U.
1332. A. A. Noyes. *Jour. Am. Chem. Soc.* 30, 335-353, (1908).
 The conductivity and ionization of salts, acids and bases in aqueous solutions at high temperatures. [Same as 1333.]
 $T = 18^{\circ}$ to 306° . R. O.
- 1332a. (A. A. Noyes. *Jour. Am. Chem. Soc.* 32, 815-861, (1910).
 Quantitative application of the theory of indicators to volumetric analysis.)
1333. A. A. Noyes. *Jour. Chim. Phys.* 6, 505-523, (1908).
 La conductibilité et l'ionisation des sels des bases et des acides en solution aqueuse aux températures élevées. [Same as 1332.]
1334. A. A. Noyes. *Zeit. Phys. Chem.* 6, 241-267, (1890).
 Ueber die gegenseitige Beeinflussung der Löslichkeit von dissociierten Körpern.
1335. A. A. Noyes. *Zeit. Phys. Chem.* 11, 495-500, (1893).
 Ueber die Wasserstoffionenspaltung bei den sauren Salzen.
1336. (A. A. Noyes. *Zeit. Phys. Chem.* 26, 699-710, (1898).
 Ueber die Zuverlässigkeit der mittels der elektrischen Leitfähigkeit bestimmten Dissociationswerte.) [Theoretical and quoted.]
1337. A. A. Noyes, C. G. Abbot. *Zeit. Phys. Chem.* 16, 125-138, (1895).
 Eine Prüfung der Prinzipie der Löslichkeitsbeeinflussung und ein Vergleich der daraus und aus der elektrischen Leitfähigkeit berechneten Dissociationswerte.
 $T = 39.75^{\circ}$. Hg. U. κ_{40} aq. $= 1.7 - 2.4 \times 10^{-6}$.
1338. A. A. Noyes, J. Johnston. *Jour. Am. Chem. Soc.* 31, 987-1010, (1909). *Meas. R. D. Gale.*
 The conductivity and ionization of polybasic salts.
 $T = 0^{\circ}$ to 156° . R. O. κ aq. $= 0.6 - 0.7 \times 10^{-6}$; sub.
1339. A. A. Noyes, Y. Kato. *Jour. Am. Chem. Soc.* 30, 318-334, (1908).
 The equivalent conductance of hydrogen-ion derived from transference experiments with nitric acid. [Same as 1340.]
1340. A. A. Noyes, Y. Kato. *Zeit. Phys. Chem.* 62, 420-439, (1908).
 Ueberführungsversuche mit Salpeter- und Salzsäure. [Same as 1339.]
1341. A. A. Noyes, Y. Kato, R. B. Sosman. *Jour. Am. Chem. Soc.* 32, 159-178, (1910). *Meas. Y. Kato, R. B. Sosman.*
 The hydrolysis of ammonium acetate and the ionization of water at high temperatures. [Same as 1341a.]
 $T = 18^{\circ}$ to 306° .

- 1341a.** A. A. Noyes, Y. Kato, R. B. Sosman. *Zeit. Phys. Chem.* 73, 1-24, (1910).
Die Hydrolyse von Ammoniumacetat und die Ionisation von Wasser bei hohen Temperaturen. [Same as 1341.]
- 1341b.** A. A. Noyes, A. C. Melcher, H. C. Cooper, G. W. Eastman. *Zeit. Phys. Chem.* 70, 335-377, (1910). *Meas. H. C. Cooper.*
The conductivity and ionization of salts, acids and bases in aqueous solutions at high temperatures. [See also 1332.]
T = 18° to 306°.
- 1342.** A. A. Noyes, G. V. Sammet. *Zeit. Phys. Chem.* 43, 513-538, (1903).
Experimentelle Prüfung der thermodynamischen Beziehung zwischen der Lösungswärme und der Aenderung der Löslichkeit mit der Temperatur im Falle dissociierter Substanzen.
T = 0° to 30°. R. O.
- 1343.** A. A. Noyes, W. H. Whitcomb. *Jour. Am. Chem. Soc.* 27, 747-759, (1905).
The solubility of lead sulphate in ammonium acetate solutions.
T = 25°. R. O.
M. Nozari see A. Campetti.

O.

- 1344.** A. Oberbeck. *Ann. Physik.* (2), 155, 595-602, (1875).
Ueber eine Methode die Leitungsfähigkeit von Flüssigkeiten für Elektrizität zu bestimmen.
- 1345.** J. Obermiller. *Ber. Deutsch. Chem. Ges.* 40, 3623-3647, (1907).
Ueber die Einwirkung von Schwefelsäure auf Phenol.
- 1346.** J. Obermiller. *Zeit. Anorg. Chem.* 59, 79-81, (1908).
Die Acidität der verschiedenen Phenolsulfonsäuren. [Criticizes adversely 1090 and 1091. See also 1715. Measurements given in 1345.]
- 1347.** H. Obladen. *Dis. Basel.* 1-40, (1906).
Ueber α -Aethyl- β -pentensäure und α -Aethyl- $\alpha\beta$ -pentensäure. [Same as 570. Same as part of 569 for k, but also gives Δ .]
T = 25°. R. O. κ aq. = 3.5×10^{-6} .
Meas. H. Obladen; see 569.
H. Obladen see F. Fichter.
- 1348.** (G. Oddo, E. Scandola. *Gaz. Chim. Ital.* 39, II, 1-21, (1909).
Sullo stato delle sostanze in soluzione in acido solforico assoluto.) [Criticism of 750 and 751.]
- 1349.** E. Oehler. *Dis. München.* (1896). *Meas. Bauer.*
Abkömmlinge von Menthon und Tetrahydrocarvon.
- 1350.** H. v. Oettingen. *Zeit. Phys. Chem.* 33, 1-38, (1900).
Ueber die Zersetzung des Natriumthiosulfats durch Säuren.
T = 20°.
P. Offenhauer see F. Stohmann, C. Kleber, Langbein.
- 1351.** M. Oker-Blom. *Arch. Gesammt. Physiol.* 79, 111-145, (1900).
Thierische Säfte und Gewebe in physikalisch-chemischer Beziehung. I. Die elektrische Leitfähigkeit des Blutes.
- 1352.** M. Oker-Blom. *Arch. Gesammt. Physiol.* 79, 510-533, (1900).
Thierische Säfte und Gewebe in physikalisch-chemischer Beziehung. II. Die Abhängigkeit der elektrischen Leitfähigkeit des Blutes von den Blutkörperchen. Beitrag zur Lehre von der Leitfähigkeit der Suspensionen.

- 1353.** M. Oker-Blom. Arch. Gesamt. Physiol. 81, 167-221, (1900).
Thierische Säfte und Gewebe in physikalisch-chemischer Beziehung. III. Mittheilung. Die Durchlässigkeit der rothen Blutkörperchen für verschiedene Stoffe, beurtheilt nach der elektrischen Leitfähigkeit.
- 1353a.** E. Oliveri-Mandalà. Gas. Chim. Ital. 40, I, 102-107, (1910).
Conduttività elettrica di alcuni acidi idrossammici.
[Probably 25°.] κ_{21} aq. = 1.5×10^{-6} .
- 1354.** Y. Ōsaka. Zeit. Phys. Chem. 35, 661-706, (1900).
Ueber die Birotation der d-Glukose.
- 1355.** (Y. Ōsaka. Zeit. Phys. Chem. 36, 539-542, (1901).
Beziehung zwischen der Dissociationskonstante und dem Dissociationsgrade eines Elektrolyts in Gegenwart anderer Elektrolyte.)
Meas. Y. Ōsaka; see 392.
- 1355a.** W. A. Osborne. Jour. Physiol. 27, 398-406, (1901-1902).
Caseinogen and its salts.
T = 25° to 48.8°.
- 1356.** L. Oslan. Dis. Heidelberg. (1901).
Dynamische Untersuchungen über die Verseifung des Acetessigesters und seiner Methylsubstitutionsprodukte. [Same as 661 for 25°, but gives also measurements at 1° and 35°.]
T = 1°, 25°, and 35°.
L. Oslan see H. Goldschmidt.
Meas. G. Ostwald; see 735.
G. Ostwald see A. Hantzsch.
- 1357.** W. Ostwald. Jour. Prakt. Chem. (2), 30, 93-95, (1884).
Notiz über das elektrische Leistungsvermögen der Säuren.
- 1358.** W. Ostwald. Jour. Prakt. Chem. (2), 30, 225-237, (1884).
Elektrochemische Studien. Die elektrische Leitungsfähigkeit der Säuren.
T = 25°. Special unit for conductivity; see also 1363.
- 1359.** W. Ostwald. Jour. Prakt. Chem. (2), 31, 219-223, (1885).
Ueber die Zuverlässigkeit elektrischer Widerstandsbestimmungen mit Wechselströmen.
T = 25°. Special unit.
- 1360.** W. Ostwald. Jour. Prakt. Chem. (2), 31, 307-317, (1885).
Studien zur chemischen Dynamik. Die Inversion des Rohrzuckers.
T = 25°. Special unit.
- 1361.** W. Ostwald. Jour. Prakt. Chem. (2), 31, 433-462, (1885).
Elektrochemische Studien. Das Verdünnungsgesetz.
T = 25°. Special unit.
- 1362.** W. Ostwald. Jour. Prakt. Chem. (2), 32, 300-374, (1885).
Elektrochemische Studien. Ueber den Einfluss der Zusammensetzung und Constitution der Säuren auf ihre elektrische Leitfähigkeit.
T = 25°. Special unit. [Multiply by 4.248 to change to Hg. U.; see 1363.] In the tables, all the measurements quoted from this article have been changed to Hg. U.
- 1363.** W. Ostwald. Jour. Prakt. Chem. (2), 33, 352-370, (1886).
Elektrochemische Studien. Die elektrische Leitfähigkeit der Basen.
T = 25°. Hg. U.
- 1364.** W. Ostwald. Jour. Prakt. Chem. (2), 35, 112-121, (1887).
Studien zur chemischen Dynamik. Ueber die Affinitätsgrößen der Basen.
T = 25°.
- 1365.** W. Ostwald. Zeit. Phys. Chem. 1, 61-62, (1887).
Ueber die Natur der chemischen Verwandtschaft.
T = 25°.

1366. W. Ostwald. Zeit. Phys. Chem. 1, 74-86, (1887).
Elektrochemische Studien. Ueber das Gesetz von F. Kohlrausch.
T=25°. Hg. U.
1367. W. Ostwald. Zeit. Phys. Chem. 1, 97-109, (1887).
Elektrochemische Studien. Ueber das Gesetz von F. Kohlrausch.
T=25°. Hg. U.
1368. W. Ostwald. Zeit. Phys. Chem. 2, 270-283, (1888).
Ueber die Dissociationstheorie der Elektrolyte.
T=25°. Hg. U. $\kappa_{aq.} = 1.8 - 2.0 \times 10^{-7}$.
- 1368a. W. Ostwald. Zeit. Phys. Chem. 2, 840-851, (1888).
Elektrochemische Studien.
T=25°. Hg. U. $\kappa_{aq.} = 1.6 - 2.0 \times 10^{-6}$ sub.
1369. W. Ostwald. Zeit. Phys. Chem. 2, 901-904, (1888).
Ueber die Bestimmung der Basicität der Säuren aus der elektrischen Leitfähigkeit ihrer Natriumsalze.
T=25°. Hg. U.
1370. W. Ostwald. Zeit. Phys. Chem. 3, 170-197, (1889).
Ueber die Affinitätsgrößen organischer Säuren und ihre Beziehungen zur Zusammensetzung und Konstitution derselben. [Given in 1377.]
T=25°. Hg. U.
1371. W. Ostwald. Zeit. Phys. Chem. 3, 241-288, (1889). # *Meas. P. Walden*.
Ueber die Affinitätsgrößen organischer Säuren und ihre Beziehungen zur Zusammensetzung und Konstitution derselben. [Given in 1377.]
T=25°. Hg. U.
1372. W. Ostwald. Zeit. Phys. Chem. 3, 369-422, (1889).
Ueber die Affinitätsgrößen organischer Säuren und ihre Beziehungen zur Zusammensetzung und Konstitution derselben. [Given in 1377.]
T=25°. Hg. U.
1373. W. Ostwald. Zeit. Phys. Chem. 5, 268, (1890). *Meas. Bader*.
Ueber die Isoximmitsäure, eine in den Nebenalkaloiden des Cocains vorkommende Säure. [This is a review of 1102 and the measurement by Bader is the same as in 1102.]
1374. W. Ostwald. Zeit. Phys. Chem. 8, 427-428, (1891). *Meas. Bersch*.
[The value of k , without a table of Δ , is given in a review of 165.]
1375. (W. Ostwald. Zeit. Phys. Chem. 9, 553-562, (1892).
Ueber mehrbasische Säuren.) [Same as 1378. Quoted.]
1376. W. Ostwald. Zeit. Phys. Chem. 11, 521-528, (1893).
Die Dissociation des Wassers.
1377. W. Ostwald. Abhand. Kön. Sächs. Ges. Wis. 15, 95-241, (1889).
Meas. P. Walden.
Ueber die Affinitätsgrößen organischer Säuren und ihre Beziehungen zur Zusammensetzung und Constitution derselben. [Same as 1370, 1371 and 1372, together.]
1378. (W. Ostwald. Ber. Verhand. Sächs. Ges. Wis. 43, 228-238, (1891).
Ueber mehrbasische Säuren.) [Same as 1375.]

[It is probable that the following measurements, stated to have been made by Ostwald, were in many cases made by students in his laboratory and are published elsewhere.]

Meas. W. Ostwald; see 53, 72, 419, 727, 1102, 1103, 1105, 1543.

A. Oswald see K. Auwers.

1379. K. Ott. Dis. München. (1908).
 Ueber Sulfide und Sulfine.
 T = 25°.
1380. J. D. Otten. Dis. München. (1887).
 Die electrische Leitungsfähigkeit der Fettsäuren und ihre Abhängigkeit von der Temperatur. [Abstracted in Beibl. Ann. Physik. 12, 259-260, (1888).
 Original not examined by me.]
Meas. Ottiker; see 471, 478.
 Ottiker see P. Dutoit.
 G. E. Owen see A. Findlay, W. E. S. Turner.
- P.
- V. Pachkoff see P. Chroustchoff.
1361. M. Padoa, B. Savarè. Gas. Chim. Ital. 36, I, 313-321, (1906).
 Sulla natura del ioduro d'amido. [Same as 1333.]
 T = 18°.
1362. M. Padoa, B. Savarè. Rend. Accad. Lincei (5), 14, I, 467-476, (1905).
 Sulla natura del ioduro d'amido. [Same as 1331.]
 H. H. Paine see W. C. D. Whetham.
 F. C. Palazzo see A. Peratoner.
Meas. S. Palitzsch; see 1639b.
1363. W. Palmaer. Zeit. Phys. Chem. 22, 492-504, (1897).
 Ueber das Verhältnis zwischen Inversionsgeschwindigkeit und Konzentration der Wasserstoffionen.
 T = 20°.
Meas. C. S. Palmer; see 1597.
 G. Papasogli see A. Bartoli.
1364. N. Parravano, A. Pasta. Gas. Chim. Ital. 37, II, 252-264, (1907).
 Sopra alcuni bicromati di metalli bivalenti con le basi organiche.
1365. N. Parravano, G. Tommasi. Gas. Chim. Ital. 39, II, 60-64, (1909).
 I sali dell'acido feniltioglicolico.
1366. C. L. Parsons. Jour. Phys. Chem. 11, 659-680, (1907).
 Solution in a dissolved solid.
 T = 25°. R. O.
- 1366a. J. R. Partington. Jour. Chem. Soc. 97, 1158-1170, (1910).
 Ionic equilibrium in solutions of electrolytes.
 F. Paschke see E. Wedekind.
- 1366b. Paschkow. Dis. Charkow. (1892). [Original not examined by me.]
 Quoted in 1843.
1367. W. P. Paschkow. Congr. russ. Naturf. Aers. Abstracted in Chem. Ztg., 14, I, 126, (1890).
 Ueber die electrische Leitungsfähigkeit einiger organischer Säuren und deren Salze mit Alkalimetallen.
 V. Pashkoff see V. Pachkoff.
 Paškov see Pachkoff.
 A. Pasta see N. Parravano.
 W. A. Patrick see E. H. Archibald.
1368. H. E. Patten. Jour. Phys. Chem. 6, 554-600, (1902).
 Influence of the solvent in electrolytic conduction.
 T = 25°. R. O. κ aq. = 4×10^{-6} .

- 1389. H. E. Patten, W. R. Mott.** Jour. Phys. Chem. 12, 49-74, (1908).
Decomposition curves of lithium chloride in pyridine and in acetone — the effect of water.
- 1390. M. Paul.** Dis. Nancy. (1906).
Contribution à l'étude de la dissociation électrolytique en milieu hydroalcoolique. [This gives data and tables of Λ for 1397.]
T = 25° and 35°. R. O. κ_{25} aq. = 1×10^{-4} .
M. Paul see P. T. Muller.
- 1391. T. Paul.** Arch. Pharm. 239, 48-90, (1901).
Untersuchungen über Theobromin und Koffein und ihre Salzbildung. [Corrected in Zeit. Phys. Chem. 36, 749, foot-note. (1901).]
T = 18° and 25°. R. O. κ aq. = 1.0 and 1.1×10^{-6} ; sub.
Meas. T. Paul; see 60, 63, 68, 69, 1104, 1212, 1398, 1670, 1672.
T. Paul see W. His.
- 1391a. T. Paul, A. Günther.** Arbeit. k. Gesundh. 29, 218-271, (1908).
* Meas. P. Maus.
Untersuchungen über den Säuregrad des Weines auf Grund der neueren Theorien der Lösungen.
T = 76°.
- 1392. T. Paul, B. Krönig.** Zeit. Phys. Chem. 21, 414-450, (1896).
Ueber das Verhalten der Bakterien zu chemischen Reagentien. [Qualitative.]
- 1393. W. Pauli.** Beitr. Chem. Physiol. Pathol. 7, 531-547, (1905-1906).
Untersuchungen über physikalische Zustandsänderungen der Kolloide. Fünfte Mitteilung. Die elektrische Ladung von Eiweiss.
- 1394. W. Pauli.** Beitr. Chem. Physiol. Pathol. 10, 53-79, (1907).
Untersuchungen über physikalische Zustandsänderungen der Kolloide. Sechste Mitteilung. Die Hitzekoagulation von Säureeiweiss.
- 1395. W. Pauli.** Naturwis. Rundsch. 21, 3-5, (1906).
Ueber die elektrische Ladung von Eiweiss und ihre Bedeutung.
- 1396. W. Pauli.** Naturwis. Rundsch. 21, 17-20, (1906).
Ueber die elektrische Ladung von Eiweiss und ihre Bedeutung.
- 1397. W. Pauli, H. Handovsky.** Biochem. Zeit. 18, 340-371, (1909).
Untersuchungen über physikalische Zustandsänderungen der Kolloide. VIII. Mitteilung. Studien am Säureeiweiss.
- *1397a. H. Pauly, J. Weir.** Ber. Deutsch. Chem. Ges. 43, 661-670, (1910).
Ueber die einseitige Esterbildung der Benzoyl-asparaginsäure.
T = 25°.
- *1397b. W. Pauli, H. Handovsky.** Biochem. Zeit. 24, 239-262, (1910).
Untersuchungen über physikalische Zustandsänderungen der Kolloide. IX. Mitteilung. Studien am Alkalieiweiss.
T = 25°.
- *1397c. H. Pauly, K. Schübel, K. Lockemann.** Ann. Chemie. 383, 288-337, (1911).
Ueber die Reaktionsfähigkeit der Phenolgruppen in den Phenolaldehyden.
T = 25°. R. O. κ_{25} aq. = 8.7×10^{-7} .
J. N. Pearce see H. C. Jones.
- 1398. H. v. Pechmann.** Ber. Deutsch. Chem. Ges. 33, 3323-3341, (1900).
Meas. T. Paul.
Ueber Dicrotonsäure.
- 1399. H. v. Pechmann, F. Neger.** Ann. Chemie. 273, 186-214, (1893).
Ueber die Einwirkung von Essigsäureanhydrid auf Acetondicarbonsäure.
Pelet see Pelet-Jolivet.

* These are out of order on account of late insertion.

- 1400.** L. Pelet-Jolivet. Bul. Soc. Vaudoise. (5), 45, 73-152, (1909).
Études théoriques sur les phénomènes de teinture. [Same as 1402 and 1404, except that no measurement is given for Congo Red.]
T = 25°. R. O.
- 1401.** L. Pelet, V. Garuti. Bul. Soc. Vaudoise. (5), 43, 1-29, (1907). *Meas. E. Francillon.*
Dosage volumétrique des matières colorantes. Dosage des matières colorantes basiques au moyen des matières colorantes acides.
- 1402.** L. Pelet-Jolivet, A. Wild. Bul. Soc. Chim. (4), 3, 1087-1094, (1908).
Études des matières colorantes en solution. [Same as 1404. Same as 1400, except that measurement of Congo Red is given here. Summary with some data is given in 1403.]
T = 25°. R. O.
- 1403.** L. Pelet-Jolivet, A. Wild. Compt. Rend. 147, 683-685, (1908).
État de matières colorantes en solution. [Given in 1400, 1402 and 1404.]
T = 25°. R. O.
- 1404.** L. Pelet-Jolivet, A. Wild. Zeit. Chem. Ind. Kolloid, 3, 174-177, (1908).
Untersuchungen über die Farbstoffe in Lösung. [Same as 1402. See 1400 and 1403.]
T = 25°. R. O.
- 1405.** (H. Pellat. Compt. Rend. 144, 902-904, (1907).
Détermination directe de la valeur absolue de la charge électrique d'un ion électrolytique monovalent. — Diamètre d'un atome.)
- 1406.** (H. Pellat. Jour. Phys. (4), 7, 195-203, (1908).
Sur la théorie de M. Nernst concernant la différence de potentiel entre électrode et électrolyte.)
- 1407.** A. Peratoner, F. C. Palazzo. Gaz. Chim. Ital. 36, I, 7-13, (1906).
Sulla costituzione dell'acido comenico. [Same as 1408 and 1409.]
- 1408.** A. Peratoner, F. C. Palazzo. Giorn. Sci. Nat. Econ. 25, 245-251, (1905).
Sulla costituzione dell'acido comenico. [Same as 1407 and 1409.]
- 1409.** A. Peratoner, F. C. Palazzo. Rend. Soc. Chim. Roma, 1, 40-41, (1903).
Sulla costituzione dell'acido comenico. [Same as 1407 and 1403.]
- 1410.** W. H. Perkin, Jr. Jour. Chem. Soc. 65, 572-591, (1894). *Meas. J. Walker.*
The cis- and trans- modifications of 1;2-tetramethylenedicarboxylic acid, and 1;2-pentamethylenedicarboxylic acid.
- 1411.** W. H. Perkin, Jr. Jour. Chem. Soc. 69, 1457-1506, (1896). *Meas. T. Ewan, and J. Walker.*
Some derivatives of propionic acid, of acrylic acid, and of glutaric acid.
W. H. Perkin, Jr. see W. A. Bone.
" " " " see A. W. Crossley.
- 1412.** W. H. Perkin, Jr., B. Prentice. Jour. Chem. Soc. 59, 818-852, (1891). *Meas. J. Walker.*
Synthesis of homologues of pentanetetracarboxylic acid and of pimelic acid.
- 1413.** W. H. Perkin, Jr., J. L. Simonsen. Jour. Chem. Soc. 91, 840-848, (1907).
The action of tribromopropane on the sodium derivative of ethyl malonate. Part II. Formation of $\Delta^{\alpha\beta}$ heptadi-inene- δ -carboxylic acid (ψ -m-toluic acid), $(\text{CH}:\text{C}.\text{CH}_2)_2\text{C}(\text{CO}_2\text{H})_2$.

- 1414.** W. H. Perkin, Jr., W. Sinclair. Jour. Chem. Soc. 61, 36-66, (1892).
Meas. J. Walker.
The synthetical formation of closed carbon chains. Part II. Derivatives of tetramethylene.
- 1415.** E. Petersen. Zeit. Phys. Chem. 22, 410-423, (1897).
Ueber die Anzahl der Ionen in einigen Kobalt-Ammoniakverbindungen.
T = 0° and 25°. κ_{25} aq. = 2.7×10^{-6} ; sub.
- 1416.** E. Petersen. Kong. Danske Vids. Selsk. Skrift. (6), 7, 303-336, (1890-1894).
Om den elektrolytiske Dissociationsvarme af nogle Syrer.
T = 21.5°.
Meas. E. Petersen; see 886.
- 1417.** (J. Petersen. Zeit. Phys. Chem. 10, 580-592, (1892).
Einige Versuche, die physischen Verhältnisse der Metallammoniakverbindungen betreffend.)
T = 18°.
A. Pezzolato see R. Nasini.
- 1418.** A. Pfaff. Dis. Heidelberg. (1897). [In autobiography gives the name as A. E. Pfaff.]
Ueber die elektrische Leitfähigkeit organischer Säuren.
T = 25°.
Meas. A. Pfaff; see 61, 64, 326.
- 1419.** E. Pfeiffer. Ann. Physik. (3), 25, 232-245, (1885).
Ueber die electrische Leitungsfähigkeit der Mischungen von Wasser und Alkohol.
T = 0° to 16°.
- 1420.** E. Pfeiffer. Ann. Physik. (3), 26, 31-44, (1885).
Ueber die electriche Leitungsfähigkeit des absoluten Alkohols.
T = Room T and 30°.
- 1421.** E. W. R. Pfeiffer. Ann. Physik. (3), 26, 226-239, (1885).
Ueber die electriche Leitungsfähigkeit der Mischungen von Aethylalkohol mit Aethyläther.
Hg. U. T = 15° and 30°.
Meas. Pfenning; see 186a.
Meas. A. Pfister; see 1547.
A. Pfister see F. Fichter.
Meas. A. Pheophilaktowa; see 1570.
- 1422.** J. C. Philip. Jour. Chem. Soc. 93, 925-927, (1908).
The dissociation constants of triazoacetic and α -triazopropionic acids.
T = 25°. κ_{25} aq. = 2×10^{-6} ; sub. only for sodium salts. [k, but not Λ given in 1423.]
- 1423.** J. C. Philip. Proc. Chem. Soc. 24, 114-115, (1908).
The dissociation constants of, etc. [Same as 1422 for k.]
- 1423a.** J. C. Philip, H. R. Courtman. Jour. Chem. Soc. 97, 1261-1271, (1910).
Behaviour of two salts with a common ion, when dissolved in an organic solvent. [A qualitative statement is given in 1423b.]
T = 25°. κ of solvent is sub.
- 1423b.** J. C. Philip, H. R. Courtman. Proc. Chem. Soc. 26, 140, (1910).
Behaviour of two salts, etc. [Qualitative. Given in 1423a with full data.]
- 1424.** (A. Piccini. Zeit. Anorg. Chem. 8, 115-120, (1895).
Ueber die Lösungen des grünen Chromchlorids $\text{CrCl}_3 \cdot 6\text{H}_2\text{O}$.) [Inorganic.]

- 1425.** N. Picton. Dis. Leipzig. (1908).
Ueber Umlagerungen aromatischer Nitrokörper.
N. Picton see A. Hantzsch.
- 1426.** (B. Piesch. Phil. Mag. (5), 38, 336, (1894).
Alterations of the electrical resistance of aqueous solutions and of galvanic polarization with pressure.) [An abstract of **1427** without data.]
- 1427.** B. Piesch. Sitzber. Akad. Wien. 103, 2a, 784-808, (1894).
Aenderungen des elektrischen Widerstandes wässeriger Lösungen und der galvanischen Polarisation mit dem Drucke. [See **1426.**]
T = Room T. S. U.
- 1428.** S. Pilat. Dis. Leipzig. (1905).
Intramoleculare Veränderungen der Cyanursäure und ihrer Salze.
T = 25° to 96.2°.
Meas. S. Pilat; see **738.**
- 1429.** W. Pip. Dis. Heidelberg. (1898).
I. Ueber die elektrische Leitfähigkeit einiger aromatischer Säuren. II. Ueber die Farbstoffbildung aus Diazobenzolsulfosäure und salzsäurem Monoäthyl-p-toluidin.
T = 25°. κ aq. = 2.6×10^{-6} ; [probably sub.]
Pisarževskij see Pissarjewsky.
- 1430.** (L. Pissarjewsky, E. Karp. Jour. Russ. Phys.-chem. Soc. 40, 564-565, (1908).
Relations between the constant of diffusion, the internal friction and electrical conductivity.) [Summary of **1431** without data.]
- 1431.** (L. Pissarjewsky, E. Karp. Jour. Russ. Phys.-chem. Soc. 40, 599-611, (1908).
Relations between the constant of diffusion, the internal friction and electrical conductivity.) [Same as **1432.** See **1430.**]
- 1432.** (L. Pissarjewsky, E. Karp. Zeit. Phys. Chem. 63, 257-268, (1908).
Die Beziehung zwischen der Diffusionskonstante, der innern Reibung und dem elektrischen Leitvermögen.) [Same as **1431.** Inorganic.]
- 1433.** L. Pissarjewsky, N. Lemcke. Jour. Russ. Phys.-chem. Soc. 37, 492-502, (1905).
Electrical conductivity and internal friction. [Same as **1434.**]
T = 25°.
- 1434.** L. Pissarjewsky, N. Lemcke. Zeit. Phys. Chem. 52, 479-493, (1905).
Der Einfluss des Lösungsmittels auf die Gleichgewichtskonstante und die Beziehung zwischen dem elektrischen Leitvermögen und der innern Reibung. [Same as **1433.**]
T = 25°.
- 1434a.** L. Pissarjewsky, A. Šapovalenko. Jour. Russ. Phys.-chem. Soc. 42, 905-938, (1910).
The electrical conductivity of KBr and KAg(CN)₂ in mixtures of glycerol with alcohols.
T = 25° and 45°.
R. Pizzighelli see A. Miolati; **1369.**
Plotnikov see Plotnikow.
- 1435.** W. A. Plotnikow. Ber. Deutsch. Chem. Ges. 39, 1794-1804, (1906).
Ueber die Verbindungen von Dimethylpyron mit Trichloressigsäure.
Elektrisches Leitvermögen der Lösungen in Aethylbromid, Chloroform und Benzol. [Tables of Λ and conclusions same as in **1439** and **1440** together, except that potassium trichloroacetate in ethyl bromide is not given here.]
T = 18°. R. O.

1436. W. A. Plotnikow. Ber. Deutsch. Chem. Ges. 42, 1154–1158, (1908).
Ueber die Verbindungen von Dimethyl-pyron mit Tribrom-essigsäure. [Same as 1442.]

T = 18°.

1437. W. A. Plotnikow. Jour. Russ. Phys.-chem. Soc. 34, 466–472, (1902).
The electrical conductivity of solutions in ethyl bromide.

T = 18°.

1438. W. A. Plotnikow. Jour. Russ. Phys.-chem. Soc. 35, 794–810, (1903).
The electrical conductivity of bromine solutions. [Same as 1446.]

T = 18°.

1439. W. A. Plotnikow. Jour. Russ. Phys.-chem. Soc. 37, 318–337, (1905).
Investigation of the electrical conductivity of non-aqueous solutions. IV. The electrical conductivity of solutions in ethyl bromide. On compounds of dimethylpyrone with acids. [Tables of Λ and conclusions are given in 1435.]

1440. W. A. Plotnikow. Jour. Russ. Phys.-chem. Soc. 37, 875–881, (1905).
Investigation of the electrical conductivity of non-aqueous solutions. V. The electrical conductivity of solutions of compounds of dimethylpyrone and trichloroacetic acid in chloroform and benzene. [Tables of Λ are given in 1435.]

1441. W. A. Plotnikow. Jour. Russ. Phys.-chem. Soc. 38, 1096–1104, (1906).

Investigation of the electrical conductivity of non-aqueous solutions. VI. Bromine and ether. [Same as 1447.]

T = 18° and 0°.

1442. W. A. Plotnikow. Jour. Russ. Phys.-chem. Soc. 40, 1238–1243, (1908).

The electrical conductivity of solutions of tribromoacetic acid dimethyl pyronates in ethyl bromide. [Same as 1436.]

T = 18°.

1443. (W. A. Plotnikow. Jour. Russ. Phys.-chem. Soc. 40, 1243–1247, (1908).

Anomalies of the direction of curves which express the change in molecular electrical conductivity in connection with the concentration.) [Theoretical and quoted.]

1444. (W. A. Plotnikow. Jour. Russ. Phys.-chem. Soc. 40, 1247–1257, (1908).

The decomposition of complex ions.)

1444a. W. A. Plotnikow. Jour. Russ. Phys.-chem. Soc. 42, 1589–1596, (1910).

The electrical conductivity of non-aqueous solutions. VIII. Aluminum bromide and nitrobenzol.

T = 25°.

1445. W. A. Plotnikow. Zeit. Anorg. Chem. 56, 53–57, (1907).
Ueber die Verbindung von Aluminiumbromid mit Aether.

1446. W. A. Plotnikow. Zeit. Phys. Chem. 48, 220–236, (1904).
Das elektrische Leitvermögen der Lösungen in Brom. [Same as 1433.]

T = 18°. R. O.

1447. W. A. Plotnikow. Zeit. Phys. Chem. 57, 502–506, (1906).
Die elektrische Leitfähigkeit der Gemische von Brom und Aether. [Same as 1441.]

W. A. Plotnikow see V. V. Neminskij.

1447a. G. Polara. Atti Accad. Gioenia. (5), 3, Mem. 6, (1901).
Sulla conducibilità elettrica della saliva mista dell'uomo.

T = 18°.

- 1448.** C. Pomeranz. *Monatsh.* 18, 575-581, (1897).
Zur Kenntniss des Pinacolins. [Same as 1449.]
- 1449.** C. Pomeranz. *Sitzber. Akad. Wien.* 106, 2b, 579-585, (1897).
Zur Kenntniss des Pinacolins. [Same as 1448.]
- 1450.** K. T. Pospischill. *Ber. Deutsch. Chem. Ges.* 31, 1950-1957, (1898).
Ueber die beiden stereoisomeren 1,3-Pentamethendicarbonsäuren. [Same as 1451.]
- 1451.** K. T. Pospischill. *Dis. Leipzig.* (1896).
Ueber die beiden stereoisomeren, etc. [Same as 1450.]
Meas. A. Postnikov; see 1760a.
- 1452.** A. Praetorius. *Monatsh.* 28, 767-802, (1907).
Ueber die alkoholische Verseifung der Benzolsulfosäureester. [Same as 1453.]
T = 50°. R. O.
- 1453.** A. Praetorius. *Sitzber. Akad. Wien.* 116, 2b, 669-704, (1907).
Ueber die alkoholische Verseifung der Benzolsulfosäureester. [Same as 1452.]
Meas. W. Praetorius; see 746, 752, 782.
B. Prentice see W. H. Perkin, Jr.
H. Probst see F. Fichter.
- 1454.** D. Protopopov, S. Reformatsky. *Jour. Russ. Phys.-chem. Soc.* 33, 242-246, (1901).
Synthesis and properties of α -isopropyl- β -isobutylethylenelactic acid.
- 1455.** (P. F. S. Provenzali. *Atti Pont. Accad. Nuov. Lincei.* 43, 58, (1890).
Presentazione di una memoria manoscritta sulle relazioni fra le proprietà ottiche dei corpi, e la loro facoltà conduttrice per l'elettrico.) [Summary of 1456.]
- 1456.** (P. F. S. Provenzali. *Mem. Pont. Accad. Nuov. Lincei.* 6, 7-23, (1890).
Sulle relazioni fra le proprietà ottiche dei corpi.) [Inorganic.]
- 1457.** (M. Prud'homme. *Bul. Soc. Chim.* (4), 1, 562-569, (1907).
Relations entre la conductibilité moléculaire des électrolytes et la dilution.) [Same as 1458 and 1460. Quoted.]
- 1458.** (M. Prud'homme. *Jour. Chim. Phys.* 5, 386-397, (1907).
Relations entre la conductibilité, etc.) [Same as 1457 and 1460.]
- 1459.** (M. Prud'homme. *Jour. Chim. Phys.* 5, 497-510, (1907).
Sur les demi-électrolytes.) [Quoted.]
- 1460.** (M. Prud'homme. *Zeit. Elektrochem.* 13, 471-474, (1907).
Beziehungen zwischen der molekularen Leitfähigkeit von Elektrolyten und der Verdünnung.) [Same as 1457 and 1458.]
- 1461.** L. Prussia. *Gaz. Chim. Ital.* 28, II, 113-122, (1898).
Ricerche sul cianuro di mercurio. [Qualitative.]

Q.

- 1462.** G. Quagliariello. *Rend. Accad. Lincei.* (5), 18, II, 217-222, (1909).
Modificazioni delle proprietà chimico-fisiche del siero di sangue riscaldato a 55°-60° C.
T = 37°.
- 1462a.** P. Quinet. *Compt. Rend.* 147, 203-206, (1908).
Formation de composés dans les solutions d'acide tartrique et de molybdate de soude. [Given in 1463.]
T = 20.5° ± 0.5°.

1463. P. Quinet. Jour. Phys. (4), 8, 278-290, (1909).
Formation de composés dans les solutions d'acide tartrique et de molybdates.
[1462a gives only sodium molybdate.]
 $T = 20.5^\circ \pm 0.5^\circ$.

R.

1464. A. v. Raalte. Rec. Trav. Chim. 18, 378-407, (1899).
Sur le phényl- et le parachlorphényl- nitrométhane.
 $T = 1.1^\circ$ to 25.2° .
- 1464a. P. Rabe. Ber. Deutsch. Chem. Ges. 43, 2964-2971, (1910). *Meas. C. Roy.*
Ueber Mutarotation und elektrische Leitfähigkeit bei Zuckern. I. Mitteilung;
Ueber den Traubenzucker.
 $T = 20^\circ$. $\kappa_{aq} = 2.07 \times 10^{-6}$; not sub.
R. Radenhausen see T. Curtius.
1465. L. Ramberg. Ber. Deutsch. Chem. Ges. 40, 2588-2589, (1907).
Notiz über die Aethyl-thioglykolsäure.
 $T = 25^\circ$. R. O. $\kappa_{aq} = 2 \times 10^{-6}$; not sub.
1466. L. Ramberg. Zeit. Anorg. Chem. 50, 439-445, (1906).
Ueber die Platosalze einiger schwefelhaltigen organischen Säuren. [Qualitative.]
1467. L. Ramberg. Zeit. Phys. Chem. 34, 561-592, (1900).
Ueber die Einwirkung von Brom auf Phenylsulfonessigsäure und α -Phenylsulfonpropionsäure in wässriger Lösung, ein Beitrag zur chemischen Kinetik.
1468. C. Ranken, W. W. Taylor. Proc. R. Soc. Edinburgh. 27, 172-180, (1906-1907).
The physical properties of mixed solutions of independent optically-active substances.
 $T = 15^\circ$ and 25° . R. O.
1469. (F. M. Raoult. Compt. Rend. 107, 442-445, (1888).
Sur les tensions de vapeur des dissolutions faites dans l'alcool.)
1470. H. Rappeport. Dis. Lausanne. (1907).
Conductibilités limites dans quelques dissolvants organiques. [Most is given in 491.]
 $T = 18^\circ$. S. U.
H. Rappeport see P. Dutoit.
1471. E. Rasch, F. W. Hinrichsen. Zeit. Elektrochem. 14, 41-46, (1908).
Meas. Koller.
Ueber eine Beziehung zwischen elektrischer Leitfähigkeit und Temperatur.
 $T = 297^\circ$ to 408° .
- 1471a. A. Rassenfosse. Bul. Acad. Belg. (1909), 995-1007.
Contribution à l'étude des phénomènes de conductibilité électrolytique des solutions fluorescentes.
1472. F. Ratz. Zeit. Phys. Chem. 19, 94-112, (1896).
Ueber die Dielektrizitätskonstante von Flüssigkeiten in ihrer Abhängigkeit von Temperatur und Druck.
 $T = 0^\circ$ to 60° .
Reformatskij see Reformatsky.
1473. S. Reformatsky. Ber. Deutsch. Chem. Ges. 28, 3262-3265, (1895).
Neue Darstellungsmethode der α, α -Dimethylglutarsäure aus der entsprechenden Oxyssäure. [Same as 1474, but does not state that Szyzskowski made the measurement.]
 $T = 25^\circ$.

1474. S. Reformataky. Jour. Russ. Phys.-chem. Soc. 28, 149-158, (1896).
Meas. Szyzskowski.
 New method of obtaining α,α -dimethylglutaric acid from the corresponding oxyacid. [Same as 1473.]
 $T = 25^\circ$.
1475. S. Reformataky. Jour. Russ. Phys.-chem. Soc. 30, 453-466, (1898).
Meas. J. I. Michajlenko.
 Preparation and properties of α,α -dimethyl- β -oxyglutaric acid.
 S. Reformataky see D. Protopopov.
 " " see B. Szyzskowski.
1476. K. Regner. Phys. Zeit. 4, 862-865, (1902-1903).
 Ueber die Frage der Widerstandsänderung von wässrigen Salzlösungen durch Bestrahlung.
1477. M. Reich. Dis. Berlin. (1900).
 Ueber elektrische Leitung reiner Substanzen.
 $T = 13^\circ$ to 22° .
 L. T. Reicher see J. H. van't Hoff.
1478. E. Reichert. Zeit. Analyt. Chem. 28, 1-25, (1889).
 Anwendung des elektrolytischen Leitungsvermögens zu quantitativen Bestimmungen.
 $T = 18^\circ \pm 0.1^\circ$. S. U.
1479. E. E. Reid. Am. Chem. Jour. 41, 483-510, (1909).
 The alcoholysis or esterification of acid amides.
1480. A. W. Reinold. Nature. 48, 624-626, (1893).
 The thickness and electrical conductivity of thin liquid films.
 $T = 17^\circ$ to 27° .
1481. F. Reitzenstein. Zeit. Anorg. Chem. 11, 254-263, (1896).
 Ueber einige Metallsalze mit organischen Basen.
 $T = 18^\circ$.
1482. F. Reitzenstein. Zeit. Anorg. Chem. 18, 253-304, (1898).
 Ammoniak-Pyridinsalze und Hydrate bivalenter Metalle.
 $T = 0^\circ$.
 F. Reizenstein. Zeit. Anorg. Chem. 11, 254, should be Reitzenstein.
1483. (A. Reyckler. Jour. Chim. Phys. 7, 58-67, (1909).
 Sur l'équilibre de dissociation des électrolytes binaires.)
1484. (J. W. Richards, W. S. Landis. Trans. Am. Electrochem. Soc. 16, 85-91, (1909).
 The practical conductance of electrolytes.) [Inorganic.]
 O. W. Richardson see H. O. Jones.
1485. E. Rieger. Zeit. Elektrochem. 7, 871-876, (1900-1901).
 Ueber die Konstitution halbkomplexer Salze nach ihrer elektrolytischen Ueberführung. [Same as 1486.]
1486. E. Rieger. Dis. Breslau. (1901).
 Ueber die Existenz komplexer Ionen in Doppelsalzen auf Grund von Ueberführungsbestimmungen. [Same as 1485.]
1487. E. H. Riesenfeld. Ber. Deutsch. Chem. Ges. 41, 3536-3552, (1908).
Meas. A. Wesch.
 Höhere Oxydationsprodukte des Chroms. 4. Mitteilung. Ueber Chromtetroxyd-Verbindungen. [Same as 1488.]
 $T = 18^\circ$. R. O. \times aq. $= 1.8 \times 10^{-4}$ and 5.8×10^{-4} .
1488. E. H. Riesenfeld. Zeit. Phys. Chem. 41, 346-352, (1902).
 Ueber den Molekularzustand von Jodkalium in Phenol.
 $T = 25^\circ$ and 43° .

- 1489.** (A. Righi. Jour. Phys. (4), 7, 589-617, (1908).
Sur quelques phénomènes dus aux rencontres entre électrons, ions, atomes et molécules.) [Gases; and theoretical.]
- 1490.** A. Righi. Nuovo Cim. (5), 10, 113-122, (1905).
Sulla diminuzione di resistenza prodotta nei cattivi conduttori dai raggi del radio. [Same as 1491. Qualitative.]
- 1491.** A. Righi. Rend. Accad. Lincei. (5), 14, II, 207-214, (1905).
Sulla diminuzione di resistenza, etc. [Same as 1490.]
- 1492.** E. Rimbach. Zeit. Phys. Chem. 16, 671-676, (1895).
Dissociation und optische Drehung aktiver Salzlösungen.
T = 20°.
- 1493.** E. Rimbach, E. Heiten. Ann. Chemie. 359, 317-335, (1908).
Ueber Eigenschaften, insbesondere das Drehungsvermögen des Saccharins und der Alkalisaccharinate. [Same as 797.]
T = 25°. R. O. \times aq. sub.
- 1494.** E. Rimbach, F. Korten. Zeit. Anorg. Chem. 52, 406-415, (1907).
Ueber einige Verbindungen des Iridiums.
T = 25°.
- 1495.** E. Rimbach, C. Neizert. Zeit. Anorg. Chem. 52, 397-405, (1907).
Zur Komplexbildung in Molybdänsäurelösungen.
T = 25°. R. O. \times aq. sub.
- 1496.** E. Rimbach, A. Schubert. Zeit. Phys. Chem. 67, 183-200, (1909).
Löslichkeit einiger schwerlöslicher Salze seltener Erdmetalle. [Same compounds with additional measurements given in 1600.]
T = 19° to 27°. R. O. \times aq. = 1×10^{-6} or less; measurements given $\approx \times$ aq.
- 1497.** E. Rimbach, O. Weber. Zeit. Phys. Chem. 51, 473-493, (1905).
Ueber Einwirkung anorganischer Substanzen auf die Drehung von Lävulose und Glukose.
[T probably 20°.] R. O. \times aq. not over 2×10^{-6} ; sub.
E. Rimini see A. Angeli.
A. Rinckenberger see A. Hantzsch.
- 1498.** W. E. Ringer. Zeit. Physiol. Chem. 60, 341-363, (1909).
Zur Acidität des Harns.
T = 18°.
- 1499.** P. Rivals. Ann. Chim. Phys. (7), 12, 501-574, (1897).
Recherches thermochimiques sur quelques composés chlorés des séries acétique, benzoïque et salicylique. [Same as 1500.]
T = 16°. S. U.
- 1500.** P. Rivals. Compt. Rend. 125, 574-576, (1897).
Sur la conductibilité électrolytique de l'acide trichloracétique. [Same as 1499.]
A. C. D. Rivett see N. V. Sidgwick.
- 1500a.** A. C. D. Rivett, N. V. Sidgwick. Jour. Chem. Soc. 97, 732-741, (1910).
The rate of hydration of acetic anhydride.
T = 25°. R. O. \times aq. = $0.6-1.5 \times 10^{-6}$.
- 1500b.** A. C. D. Rivett, N. V. Sidgwick. Jour. Chem. Soc. 97, 1677-1686, (1910).
The rate of hydration of acid anhydrides; succinic, methylsuccinic, itaconic, maleic, citraconic, and phthalic. [k, but no cond. is given in 1500c.]
T = 25°.
- 1500c.** A. C. D. Rivett, N. V. Sidgwick. Proc. Chem. Soc. 26, 200, (1910).
The rate of hydration, etc. [Only k is given here. Tables of cond. are given in 1500b.]
D. J. Roberts see J. J. Sudborough.

- 1501. T. B. Robertson.** Jour. Biol. Chem. 2, 317-383, (1906-1907).
Studies in the chemistry of the ion-proteid compounds. IV. On some chemical properties of casein and their possible relation to the chemical behavior of other protein bodies, with especial reference to hydrolysis of casein by trypsin.
- 1501a. T. B. Robertson.** Jour. Biol. Chem. 7, 351-357, (1909-1910).
Concerning the relative magnitude of the parts played by the proteins and by the bi-carbonates in the maintenance of the neutrality of the blood.
T = 34°.
- 1502. (T. B. Robertson.)** Jour. Phys. Chem. 10, 524-582, (1906).
On the conditions of equilibrium of an associating amphoteric electrolyte in the presence of any number of non-amphoteric electrolytes. [Theoretical. Gives also a bibliography of the dissociation of proteins.]
- 1503. T. B. Robertson.** Jour. Phys. Chem. 11, 437-459, (1907).
On the dissociation of serum globulin at varying hydrogen ion concentrations.
T usually 20°. R. O. α aq. = 7.3×10^{-6} ; sub.
- 1504. T. B. Robertson.** Jour. Phys. Chem. 11, 542-552, (1907).
On the dissociation of solutions of the neutral caseinates of sodium and ammonium.
T = 25°. R. O. α aq. = 8×10^{-6} ; sub.
- 1505. T. B. Robertson.** Jour. Phys. Chem. 12, 473-483, (1908).
On the dissociation of solutions of the "basic" caseinates of sodium and ammonium.
- 1506. T. B. Robertson.** Jour. Phys. Chem. 13, 469-489, (1909).
On the refractive indices of solutions of the caseinates and the acid- and alkali-equivalents of casein.
- 1506a. T. B. Robertson.** Jour. Phys. Chem. 14, 523-568, (1910).
Studies in the electrochemistry of the proteins. I. The dissociation of potassium caseinate in solutions of varying alkalinity.
T = 30°. R. O. α aq. not over 8×10^{-6} ; not sub.
- 1506b. T. B. Robertson.** Jour. Phys. Chem. 14, 601-611, (1910).
Studies in the electrochemistry of the proteins. II. The dissociation of solutions of the "basic" caseinates of the alkaline earths.
T = 30°. R. O. α aq. = 4.5×10^{-6} ; sub.
- 1506c. T. B. Robertson.** Jour. Phys. Chem. 14, 709-718, (1910).
Studies in the electrochemistry of the proteins. III. The dissociation of the salts of ovo-mucoid in solutions of varying alkalinity and acidity.
T = 20°. R. O.
- R. Robison see A. Hantzsch.
L. Röder see H. Goldschmidt.
- 1506d. H. Röhrer.** Zeit. Elektrochem. 16, 419-436, (1910).
Untersuchungen über Formamid als Lösungsmittel für anorganische Salze und über die Elektrolyse dieser Lösungen. [Same as 1507.]
T = 25°.
- 1507. H. Röhrer.** Dis. Leipzig. (1909).
Untersuchungen über Formamid als Lösungsmittel, etc. [Same as 1506d.]
- 1508. H. Roemer.** Dis. Münster. (1907).
Bestimmung der Basisität durch Titration mittels Leitfähigkeitsmessung mit besonderer Berücksichtigung hydroxylhaltiger aromatischer Verbindungen. [Most is given in 1718.]
T = 25°. R. O. α aq. = 9.5×10^{-6} ; not sub.
H. Roemer see A. Thiel.
" " see A. Thiel, A. Schumacher.

1509. W. C. Röntgen. *Ann. Physik.* (3), 52, 593-603, (1894).
Ueber die Einfluss des Druckes auf die Dielectricitätsconstante des Wassers und des Aethylalcohols.
1510. (W. C. Röntgen. *Nachr. Ges. Wis. Göttingen.* (1893), 505-511.
Ueber den Einfluss des Druckes auf das galvanische Leistungsvermögen von Electrolyten.) [Inorganic.]
1511. (W. C. Röntgen. *Sitzber. Phys.-med. Ges. Würzburg.* (1895), 132-141.
Ueber eine neue Art von Strahlen.)
P. Rona see L. Michaelis.
- 1511a. P. Rona, L. Michaelis. *Biochem. Zeit.* 21, 114-122, (1909).
Ueber den Zustand des Calciums in der Milch.
T = 25°.
- 1511b. P. Rona, L. Michaelis. *Biochem. Zeit.* 28, 193-199, (1910).
Beiträge zur allgemeinen Eiweisschemie. II. Mitteilung. Ueber die Fällung der Globuline im isoelektrischen Punkt.
Roncati see Nicolosi-Roncati.
1512. M. Ronus. *Dis. Basel.* (1901). *Meas. H. Labhardt.*
Ueber Cineolsäure. [Same as 1546.]
T = 20°.
M. Ronus see H. Rupe.
1513. (E. B. Rosa. *Phil. Mag.* (5), 31, 188-207, (1891).
Specific inductive capacity of electrolytes.) [Temperature coefficients.]
Meas. N. Rosanoff; see 744.
Roschdestvensky see Roždestvenskij.
- Meas. F. Rose*; see 990.
F. Rose see F. Kohlrausch.
1514. (A. Rosenheim. *Zeit. Anorg. Chem.* 11, 175-222, (1896).
Ueber die Einwirkung anorganischer Metallsäuren auf organische Säuren.)
1515. A. Rosenheim. *Zeit. Anorg. Chem.* 11, 225-248, (1896). *Meas. F. Hamburger.*
Ueber die Einwirkung anorganischer Metallsäuren auf organische Säuren.
[See 1516 for more accurate measurements.]
T = 18°.
1516. A. Rosenheim. *Zeit. Anorg. Chem.* 21, 1-18, (1899), *Meas. I. Koppel.*
Ueber die Einwirkung anorganischer Metallsäuren auf organische Säuren.
T = 25°.
1517. A. Rosenheim. *Zeit. Anorg. Chem.* 54, 97-103, (1907).
Untersuchungen über die Halogenverbindungen des Molybdäns und Wolframs.
T = 25°.
Meas. A. Rosenheim; see 692, 1023.
1518. A. Rosenheim, A. Berthelm. *Zeit. Anorg. Chem.* 34, 427-447, (1903).
Die Hydrate der Molybdänsäure und einige ihrer Verbindungen.
T = 25°.
1519. A. Rosenheim, H. Grünbaum. *Zeit. Anorg. Chem.* 61, 187-201, (1909).
Ueber tetragene Doppelsalze des Antimonfluorids.
T = 0°. aq. is "purest conductivity aq."
1520. A. Rosenheim, J. Hertzmann. *Ber. Deutsch. Chem. Ges.* 40, 810-814, (1907).
Zirkoniumtetrachlorid und kolloidales Zirkoniumhydroxyd.
T = 0° and 25°. R. O.

- 1521. A. Rosenheim, H. Itzig.** Ber. Deutsch. Chem. Ges. 32, 3424-3440, (1899).
 Ueber einige complexe Salze der Weinsäure und Aepfelsäure und ihr spezifisches Drehungsvermögen. [Same as 867.]
 T = 25°.
- 1522. A. Rosenheim, W. Levy.** Zeit. Anorg. Chem. 43, 34-47, (1905).
 Ueber Platinphosphorhalogenverbindungen und ihre Derivate. [Part is same as 1076, but has no measurement at 0°.]
 T = 25°.
- 1523. A. Rosenheim, O. Liebkecht.** Ber. Deutsch. Chem. Ges. 31, 405-414, (1898).
 Ueber alkylschwefligsäure Salze.
 T = 0° and 25°.
- 1524. A. Rosenheim, W. Loewenstamm.** Zeit. Anorg. Chem. 34, 62-81, (1903).
 Ueber die Thiocarbamidverbindungen einwertiger Metallsalze. [Same as 1117 for 25°.]
 T = 25° and 0°.
- 1525. (A. Rosenheim, W. Loewenstamm.** Zeit. Anorg. Chem. 37, 394-406, (1903).
 Ueber Platinphosphorhalogenverbindungen und ihre Derivate.) [Inorganic.]
- 1526. A. Rosenheim, V. J. Meyer.** Zeit. Anorg. Chem. 49, 13-27, (1906).
 Ueber die Thiokarbamidverbindungen zweiwertiger Metallsalze.
 T = 25°.
- 1527. A. Rosenheim, V. J. Meyer.** Zeit. Anorg. Chem. 49, 28-33, (1906).
 Notiz über die Absorptionsspektren von Lösungen isomerer komplexer Kobaltsalze.
 T = 25°.
- 1528. A. Rosenheim, P. Müller.** Zeit. Anorg. Chem. 39, 175-186, (1904).
 Ueber Ferriacetoverbindungen.
 T = 25°.
- 1529. A. Rosenheim, W. Stadler.** Ber. Deutsch. Chem. Ges. 38, 2687-2690, (1905).
 Die Thioäpfelsäure und ihre Salze.
 T = 25°.
- 1530. A. Rosenheim, W. Stadler.** Zeit. Anorg. Chem. 49, 1-12, (1906).
 Ueber Verbindungen des Thiokarbamids und Xanthogenamids mit Salzen des einwertigen Kupfers.
 T = 25°.
- 1530a. A. Rosenheim, M. Weinheber.** Zeit. Anorg. Chem. 69, 261-265, (1910).
 Ueber Tellurssäureoxalate.
 T = 25°.
- 1531. W. H. Ross.** Proc. Trans. Nova Scot. 11, 95-114, (1902-1906).
 Contribution to the study of hydroxylamine and its salts.
 T = 18°. Hg. U. χ_{18} aq. is about 1.1×10^{-6} ; sub.
- 1532. G. Rossi.** Arch. Fisiol. 1, 500-504, (1904).
 La viscosità e la resistenza elettrica del siero di sangue a temperature diverse e prossime a quella dell'organismo.
 T = 30° to 60°.
- U. Rossi see G. Carrara.
 J. v. Roszkowski see S. v. Niementowski.
 A. W. Roth see H. Henkel.

1533. W. A. Roth. Ber. Deutsch. Chem. Ges. 33, 2032-2035, (1900).
Affinitätsconstanten einiger Säuren mit Kohlenstoffäbenring.
T = 25°. R. O. κ_{25} aq. = $1.3-1.5 \times 10^{-6}$; not sub. Also gives k with aq. sub.
1534. W. A. Roth. Zeit. Phys. Chem. 42, 209-224, (1902-1903).
Elektrisches Leitvermögen von Kaliumchlorid in Wasser-Aethylalkoholgemischen.
T = 18°. R. O.
Meas. W. A. Roth; see 1027, 1239, 1542.
1535. V. Rothmund. Monatsh. 26, 1545-1558, (1905).
Ueber die Einwirkung des Acetons auf Alkalisulfite.
T = 25°. R. O.
Meas. V. Rothmund; see 843, 1074, 1974, 1975, 1976, 1977, 1978, 1979.
1536. V. Rothmund, K. Drucker. Zeit. Phys. Chem. 46, 827-852, (1903).
Ueber die elektrolytische Dissociation der Pikrinsäure.
T = 25°. R. O. κ_{25} aq. = 1.5×10^{-6} ; not sub.
C. A. Rouiller see H. C. Jones.
Meas. C. Roy; see 1464a.
M. S. Roždestvenskij see A. G. Doroševskij.
W. Ruckstuhl see R. Lorenz.
Meas. E. Rudin; see 571.
1537. M. Rudolphi. Zeit. Phys. Chem. 17, 277-300, (1895).
Ueber Lösungs- und Dissociationswärmen.
T = 25° to 60°. S. U. κ aq. sub.
1538. (M. Rudolphi. Zeit. Phys. Chem. 17, 385-426, (1895).
Ueber die Gültigkeit der Ostwaldschen Formel zur Berechnung der Affinitätskonstanten.) [Quoted.]
1539. G. Rudolf. Zeit. Phys. Chem. 43, 257-304, (1903).
Zur Kenntnis der Leitfähigkeiten und innern Reibungen von Lösungen.
[Same as 1540.]
T = 25° \pm 0.05°. κ aq. about 4×10^{-6} ; not sub.
1540. G. Rudolf. Dis. Breslau. (1903).
Zur Kenntnis der Leitfähigkeiten, etc. [Same as 1539.]
A. Rücker see A. Naumann.
1541. (H. Rüping. Dis. Erlangen. (1897). Abstracted in Beibl. Ann. Physik. 22, 412, (1898).
I. Beiträge zur Kenntnis der Ketomenthylsäure und Menthoximsäure.
II. Leitfähigkeit wässrig-alkoholischer Salzlösungen.) [Inorganic.]
1542. O. Ruff. Ber. Deutsch. Chem. Ges. 32, 550-560, (1899). Meas. W. [A.] Roth.
d- und r-Arabinose.
T = 25°.
O. E. Ruhoff see L. Kahlenberg.
1543. H. Rupe. Ann. Chemie, 256, 1-28, (1890). Meas. W. Ostwald.
Ueber die Reductionsproducte der Dichlormuconsäure.
[Baeyer's name is not in the title of this article.]
1544. H. Rupe. Ber. Deutsch. Chem. Ges. 33, 1129-1140, (1900). Meas. Labhardt.
Ueber Cineolsäure.
T = 18°.
H. Rupe see O. Manasse.
1545. H. Rupe, W. Lotz. Ber. Deutsch. Chem. Ges. 36, 2796-2802, (1903).
Ueber einige Condensationen mit Citronellal. [Qualitative. Corrected in Ber. Deutsch. Chem. Ges. 40, 2813-2817, (1907).]

1546. H. Rupe, M. Ronus. Ber. Deutsch. Chem. Ges. 34, 2191-2206, (1901). *Meas. H. Labhardt.*
 Ueber Cineolsäure. [Same as 1512.]
 T = 20°.
1547. H. Rupe, M. Ronus, W. Lotz. Ber. Deutsch. Chem. Ges. 35, 4265-4272, (1902). *Meas. A. Pfister.*
 Ueber die Darstellung von ungesättigten aliphatischen Säuren mit einer Doppelbindung in der α, β -Stellung.
1548. This reference has been omitted intentionally.
1549. E. Ruppin. Zeit. Phys. Chem. 14, 467-485, (1894).
 Volumänderungen bei der Neutralisation starker Säuren und Basen.
 P. v. Rušnov see R. Wegscheider.
1550. F. Russ. Zeit. Anorg. Chem. 31, 42-91, (1902).
 Ueber Nioboxalsäure.
 K. Russwurm see H. Stobbe.

S.

1551. (B. Sabat. Bul. Acad. Cracov. (1906), 62-79.
 Ueber den Einfluss der Radiumstrahlen auf das Leitvermögen der Elektrolyte.)
 [Inorganic.]
1552. (L. Sabbatani, G. Buglia. Arch. Fisiol. 3, 154-163, (1906).
 Velocità di coagulazione al calore di liquidi albuminosi.)
- 1552a. A. Sachanov. Jour. Russ. Phys.-chem. Soc. 42, 683-690, (1910).
 The electrical conductivity of solutions in aniline, methylaniline and dimethyl-aniline.
 T = 25°. R. O.
1553. O. Sackur. Ber. Deutsch. Chem. Ges. 35, 1242-1252, (1902).
 Ueber die basischen Eigenschaften des vierwerthigen Sauerstoffs.
 T = 15° and 22°. R. O.
1554. O. Sackur. Zeit. Phys. Chem. 38, 129-162, (1901).
 Ueber den Einfluss gleichioniger Zusätze auf die elektromotorische Kraft von Flüssigkeitsketten. Ein Beitrag zur Kenntnis des Verhaltens starker Elektrolyte.
 T = 18° and 25°.
1555. O. Sackur. Zeit. Phys. Chem. 41, 672-680, (1902).
 Das elektrische Leitvermögen und die innere Reibung von Lösungen des Caseins. [An abridgement of 1054. No measurement of isocasein is given here.]
 T = 25°. R. O. κ aq. = 2.6×10^{-6} ; sub.
 O. Sackur see E. Laqueur.
 P. J. Sageman see J. Holmes.
1556. Saïd-Effendi. Compt. Rend. 68, 1565-1567, (1869).
 Mesure de la conductibilité électrique des liquides considérés jusqu'à présent comme isolants.
1557. J. Sakurai. Jour. Chem. Soc. 69, 1654-1662, (1896).
 Molecular conductivity of amidosulphonic acid.
 T = $25.00 \pm 0.05^\circ$. κ aq. = 1.9×10^{-6} ; not sub. for acid, sub. for salt.
1558. R. Salcher. Dis. Heidelberg. (1899).
 Studien über die Aminolyse. [Same as 664.]
 T = 25°.
 R. M. Salcher see H. Goldschmidt.
1559. (W. Salezsky. Zeit. Elektrochem. 10, 204-208, (1904).
 Ueber Indikatoren der Acidimetrie und Alkalimetrie.)

1560. (E. Salm. Zeit. Elektrochem. 10, 341-346, (1904).
Die Bestimmung des H⁺-Gehaltes einer Lösung mit Hilfe von Indikatoren.)
1561. E. Salm. Zeit. Elektrochem. 12, 99-101, (1906).
Kolorimetrische Affinitätsmessungen. [Given in 1562.]
1562. E. Salm. Zeit. Phys. Chem. 57, 471-501, (1906).
Studie über Indikatoren. I. Teil. Die Verwendung der Indikatoren zu Affinitätsmessungen. [Same as 1561, but contains also camphoronic acid.] ;
T = 18° to 19°.
1563. E. Salm. Zeit. Phys. Chem. 63, 83-108, (1908).
Messungen der Affinitätsgrößen organischer Säuren mit Hilfe von Indikatoren.
T = 18°.
- Meas. E. Salm; see 274.
1564. (E. Salm, H. Friedenthal. Zeit. Elektrochem. 13, 125-130, (1907).
Zur Kenntnis der Acidimetrischen und Alkalimetrischen Indikatoren.)
1565. (R. Salvadori. Gaz. Chim. Ital. 26, I, 237-254, (1896).
Dissociazione elettrolitica in relazione colle variazioni della temperatura. I. Studi crioscopici ed ebullioscopici sopra le soluzioni acquose e in alcool metilico di alcuni cloruri.) [Inorganic.]
1566. (R. Salvadori. Gaz. Chim. Ital. 30, II, 544-548, (1900).
Riconoscimento della dissociazione idrolitica per mezzo della conducibilità elettrica.) [Inorganic.]
1567. A. H. Salway. Dis. Leipzig. (1906).
Ueber farbige Salze aus farblosen Nitrokörpern. [Part is given in 745; part in 1092.]
T = 0° and 25°.
- Meas. A. H. Salway; see 745, 1092.
1568. M. Samec. Monatsh. 26, 391-411, (1905).
Kondensation von Formisobutyraldol mit Dimethylanilin.
T = 25° and 0°.
- G. V. Sammet see A. A. Noyes.
1569. J. L. Sammis. Jour. Phys. Chem. 10, 593-625, (1906).
On the relation of chemical activity to electrolytic conductivity.
T = 25°, except for a few measurements at 7° and 7.5°.
1570. A. Samojloff. Biochem. Zeit. 11, 210-225, (1908). Meas. with A. *Pheophilaktowa*.
Ueber den Einfluss der Gerinnung des Blutes auf die Leitfähigkeit desselben.
T = 25° and 38.9°.
1571. J. Sand. Ber. Deutsch. Chem. Ges. 38, 3642-3654, (1905).
Salze der Krystallviolettgruppe.
J. Sand see J. Maas.
1572. J. Sand, O. Burger. Ber. Deutsch. Chem. Ges. 39, 1761-1770, (1906).
Reduction von Molybdänsäure in rhodanwasserstoffsaurer Lösung.
1573. J. Sand, O. Burger. Ber. Deutsch. Chem. Ges. 39, 1771-1779, (1906).
Oxydation von Chromosalzen.
T = 24°. R. O.
- C. Sandonnini see G. Bruni.
- 1573a. C. Sandonnini. Zeit. Elektrochem. 16, 227-229, (1910).
Vergleichende Untersuchungen über Salzbildung vom physikochemischen Standpunkte.
T = 25°.

- 1574. H. Sandqvist.** Ann. Chemie. 369, 104-117, (1909).
 Ueber Phenanthren-3-sulfosäure und einige ihrer Derivate.
 $T = 18.00^\circ$. R. O. κ_{18} aq. $= 1.8 \times 10^{-6}$.
 Saposchnikoff see Sapožnikov.
 Saposchnikov see Sapožnikov.
 A. Šapovalenko see P. Pissarjewsky.
- 1575. W. Sapožnikov.** Jour. Russ. Phys.-chem. Soc. 25, 626-631, (1893).
 On the electrical conductivity of formic acid.
 $T = 8.3^\circ$ to 18.8° .
Meas. W. Sapožnikov; see 1011, 1013.
 L. W. Sargent see G. N. Lewis.
- 1576. W. Sarow.** Dis. Berlin. (1905).
 Ueber die Konstitution der schwefligen Säure und ihrer Derivate. Versuche über das Sulfamid.
 $T = 25^\circ$. κ aq. $= 4.9 \times 10^{-6}$.
 B. Savarè see M. Padoa.
 N. Scalinci see F. Bottazzi.
 E. Scandola see G. Oddo.
- 1577. H. Schäfer, R. Abegg.** Zeit. Anorg. Chem. 45, 293-323, (1905).
 Untersuchungen über die Elektroaffinität der Anionen. 1. Das Oxalat-Ion.
 $T = 15.5^\circ$, 18.5° and 25° .
 K. Schaefer see H. Ley.
- 1578. C. Schall.** Zeit. Elektrochem. 14, 397-405, (1908).
 Ueber organische und geschmolzene Salze.
 $T = 17^\circ$ to 113° . R. O.
- 1579. C. Schall.** Zeit. Phys. Chem. 14, 701-708, (1894).
 Ueber die Abnahme der molekularen Leitfähigkeit einiger starken, organischen Säuren bei Ersatz des Lösungswassers durch Alkohole. [See 1580.]
 $T = 25^\circ$.
- 1580. C. Schall.** Zeit. Phys. Chem. 19, 699-700, (1896).
 Nachtrag zur Letzten Abhandlung. [Supplementary to 1579.]
- 1581. R. Schaller.** Zeit. Phys. Chem. 25, 497-524, (1898).
 Messungen der elektrischen Leitfähigkeit an verdünnten Lösungen bei Temperaturen bis 100° . [The values of k are only approximate values.]
 $T = 25^\circ$ to 99° . κ aq. not over 1.5×10^{-6} ; not sub.
- 1581a. C. Schaper.** Zeit. Phys. Chem. 72, 308-322, (1910).
 Ueber das Oxydationspotential der Oxalate des Eisens und des Oxalations.
 $T = 17^\circ$ to 30° .
- 1582. B. Schapire.** Zeit. Phys. Chem. 49, 513-541, (1904).
 Beitrag zur Kenntnis des elektrischen Leitvermögens von Natrium- und Kaliumchlorid in Wasser-Aethylalkoholgemischen. [Same as 1583.]
 $T = 18^\circ$. R. O. κ_{18} aq. $= 1.25 \times 10^{-6}$.
- 1583. B. Schapire.** Dis. Berlin. (1904).
 Beitrag zur Kenntnis des elektrischen Leitvermögens, etc. [Same as 1582.]
 M. Scheidt see G. Magnanini.
- 1584. R. Schenck, [A. Kreichgauer].** Sitzber. Ges. Naturw. Marburg. (1899), 43-47.
 Ueber den Einfluss von Säuren auf das optische Drehungsvermögen von Asparaginslösungen.
- 1585. T. Scheutz.** Dis. Zürich. (1901).
 Ueber alkylierte Amidobenzolsulfosäuren und Metamidophenole. [Same as 645.]
 T. Scheutz see R. Gnehm.
Meas. G. Schick; see 760.

1586. (U. Schiff. *Gaz. Chim. Ital.* 28, I, 49-64, (1898).
Intorno a composti poliaspartici.) [No conductivity.]
K. Schilling see J. Koenigsberger.
1587. R. v. Schilling. *Dis. Halle.* (1899).
Die elektrolytische Leitfähigkeit der Hydroresorcine und δ -Ketonsäuren.
[Same as 1586, with some additional measurements of succinic and γ -acetylbutyric acids.]
1588. R. v. Schilling, D. Vorländer. *Ann. Chem.* 308, 184-202, (1899).
Die elektrolytische Leitfähigkeit der Hydroresorcine und δ -Ketonsäuren.
[Given in 1587.]
T = 25°. R. O. κ aq. = $2.1-3.4 \times 10^{-6}$; not sub.
1589. A. Schlamp. *Zeit. Phys. Chem.* 14, 272-285, (1894).
Zur Dissociationstheorie der Lösungen.
T = 15.6°.
1590. H. I. Schlesinger. *Am. Chem. Jour.* 39, 719-771, (1908).
Studies in catalysis. VI. The catalysis of imidoesters.
T = 0°. R. O.
J. Schliemann see E. Lellmann.
H. Schlundt see L. Kahlenberg.
- 1590a. E. W. Schmidt. *Zeit. Phys. Chem.* 75, 305-336, (1910-1911).
Ueber den Einfluss des Druckes auf das elektrolytische Leitvermögen von
Lösungen in verschiedenen Lösungsmitteln.
T = 0° to 60°.
1591. (M. R. Schmidt. *Am. Chem. Jour.* 40, 305-313, (1908).
The basicity of acids as determined by their conductivities.) [Inorganic.]
1592. M. R. Schmidt, H. C. Jones. *Am. Chem. Jour.* 42, 37-95, (1909).
Conductivity and viscosity in mixed solvents containing glycerol.
T = 25° and 35°. S. U. κ aq. = $1.2-1.5 \times 10^{-6}$.
1593. O. Schmidt. *Dis. Bonn.* (1898).
Ueber die Konstitution der Einwirkungsprodukte von Diazoverbindungen
auf primäre Nitrokörper und über stereoisomere Hydrazone. [Same as 82.]
T = 0° and 25°. κ_{25} aq. = 3×10^{-6} ; not sub.
Meas. O. Schmidt; see 78, 82.
O. Schmidt see E. Bamberger.
R. Schmidt see F. Stohmann.
1594. V. Scholz. *Dis. Heidelberg.* (1902).
Dynamische Untersuchungen über die Verseifung von Säureestern und die
Affinitätsconstanten derselben. [Part is given in 666.]
V. Scholz see H. Goldschmidt.
O. Schreiner see L. Kahlenberg.
- Meas.* E. Schröder; see 875.
H. Schröder see J. W. Brühl.
1595. (I. F. Schröder. *Jour. Russ. Phys.-chem. Soc.* 30, 333-334, (1898).)
[No title. This is in a report of a meeting. The subject is the conductivity
of ammonium nitrate in ammonia.]
1596. J. Schroeder. *Ann. Physik.* (4), 29, 125-152, (1909).
Das Verhalten des Aethyläthers beim Durchgange eines elektrischen Stromes.
T = 1°, 18°, and 30°.
1597. S. B. Schryver. *Jour. Chem. Soc.* 63, 1327-1345, (1893). *Meas.* C.
S. Palmer.
Researches on the oxidation products of turpentine oil. [k is given in 1598,
but no table of μ and k.]
T = 25°.

- 1598.** S. B. Schryver. Proc. Chem. Soc. 9, 187, (1893).
Studies of the oxidation products of turpentine. [Same as 1597 for k.]
- 1599.** S. B. Schryver, R. Lessing. Jour. Soc. Chem. Ind. 28, 60-67, (1909).
A physico-chemical method for comparing the antiseptic value of disinfectants.
T = 37°.
- 1600.** A. Schubert. Dis. Bonn. (1908).
Löslichkeitsbestimmungen an schwerlöslichen Salzen seltener Erdmetalle.
[Most is given in 1496.]
T = 18° to 26°. R. O. κ_{25} aq. = 2×10^{-6} ; sub.
A. Schubert see E. Rimbach.
Meas. A. Schubert; see 1749.
K. Schübel see H. Pauly.
- 1601.** M. Schümann. Ber. Deutsch. Chem. Ges. 33, 527-533, (1900).
Zur Kenntniss des Diazotierungsprocesses und der salpetrigen Säure.
T = 20°.
- 1602.** M. Schümann. Dis. Würzburg. (1899).
Zur Kenntniss des Diazotierungs-Processes und der Verbindungen R.N₂OH.
[Given in 774.]
T = 0°.
Meas. M. Schümann; see 735, 779.
M. Schümann see A. Hantzsch.
- Meas.* A. Schugowitsch; see 1916.
O. W. Schultze see A. Hantzsch.
A. Schumacher see A. Thiel.
- 1603.** J. Schwab. Dis. Basel. (1904).
I. Ueber die stereoisomeren β -Methylglutaconsäuren. II. Ueber o-Diamino-
guajacol und sein Oxydationsprodukt. [Same as 572.]
T = 25°. R. O. κ aq. = 3×10^{-6} .
J. Schwab see F. Fichter.
- 1604.** E. v. Schweidler. Ann. Physik. (4), 4, 307-315, (1901).
Ueber das Verhalten flüssiger Dielektrika beim Durchgange eines elektrischen
Stromes. [Same as 1607.]
- 1605.** E. v. Schweidler. Ann. Physik. (4), 5, 483-486, (1901).
Ueber das Verhalten flüssiger Dielektrika beim Durchgange eines elektrischen
Stromes.
R. O.
- 1606.** (E. v. Schweidler. Ann. Physik. (4), 24, 711-770, (1907).
Studien über die Anomalien im Verhalten der Dielektrika.) [Same as
1608.]
- 1607.** E. v. Schweidler. Sitzber. Akad. Wien. 109, 2a, 964-973, (1900).
Ueber das Verhalten, etc. [Same as 1604.]
- 1608.** (E. v. Schweidler. Sitzber. Akad. Wien. 116, 2a, 1019-1080,
(1907).
Studien über die Anomalien, etc.) [Same as 1606.]
E. v. Schweidler see C. Böhm-Wendt.
E. Scipiadès see G. Farkas.
M. Scott see S. Deakin.
- 1609.** (H. Scudder. Jour. Phys. Chem. 7, 269-299, (1903).
The reliability of the dissociation constant as a means of determining the iden-
tity and purity of organic compounds.) [Quoted.]
F. Sebaldt see A. Hantzsch.

- 1609a. (S. W. Sërkov. Zeit. Phys. Chem. 73, 557-577, (1910).
Die elektrische Leitfähigkeit von Lösungen und der Zustand des gelösten Stoffes.) [Inorganic.]
S. Seydel see H. Stobbe.
- Meas. G. H. Shadinger; see 15.
G. H. Shadinger see S. F. Acree.
1610. (W. N. Shaw. Proc. Cambridge Phil. Soc. 7, 21-31, (1889-1892).
On the relation between viscosity and conductivity of electrolytes.) [Quoted.]
- 1610a. J. Shields. Zeit. Phys. Chem. 12, 167-187, (1893).
Ueber Hydrolyse in wässrigen Salzlösungen. [Saponification of esters.]
T = 24.1° and 24.2°.
1611. F. L. Shinn. Jour. Phys. Chem. 11, 201-224, (1907).
On the optical rotatory power of salts in dilute solutions.
[T is probably 25°.] κ aq. is about 2×10^{-6} ; sub.
1612. F. L. Shinn. Jour. Phys. Chem. 11, 537-541, (1907).
On the electrical conductivity of solutions in ethyl amine.
T = 0°. R. O.
1613. I. Shukoff. Ber. Deutsch. Chem. Ges. 33, 2691-2693, (1905).
Beitrag zur Kenntniss der metallorganischen Verbindungen.
T = 25°.
- N. V. Sidgwick see A. C. D. Rivett.
1614. N. V. Sidgwick, T. S. Moore. Jour. Chem. Soc. 95, 889-898, (1909).
The rate of reaction of the triphenylmethane dyes with acid and alkali. Part II. Brilliant-green and malachite-green. [Same as 1615 for k. Measurements given in full here.]
1615. N. V. Sidgwick, T. S. Moore. Proc. Chem. Soc. 25, 123-124, (1909).
The rate of reaction, etc. [Same as 1614 for k.]
1616. N. V. Sidgwick, T. S. Moore. Zeit. Phys. Chem. 58, 385-408, (1907).
Zur Dynamik der Tautomerie. I. Brillantgrün.
1617. N. V. Sidgwick, A. C. D. Rivett. Jour. Chem. Soc. 95, 899-908, (1909).
The rate of reaction of the triphenylmethane dyes with acid and alkali. Part III. Diaminotriphenylcarbinol. [Same as 1618 for k. Measurements given in full here.]
1618. N. V. Sidgwick, A. C. D. Rivett. Proc. Chem. Soc. 25, 124-125, (1909).
The rate of reaction, etc. [Same as 1617 for k.]
- 1618a. N. V. Sidgwick, H. T. Tizard. Jour. Chem. Soc. 97, 957-972, (1910).
The colour and ionisation of cupric salts. [Qualitative statement in 1618b.]
T = 18°. R. O. κ_{18} aq. = $1-1.5 \times 10^{-6}$.
- 1618b. N. V. Sidgwick, H. T. Tizard. Proc. Chem. Soc. 26, 67, (1910).
The colour and ionisation of cupric salts. [Qualitative. Given in 1618a with full data.]
- 1618c. M. Siegfried. Ergebn. Physiol. 9, 334-350, (1910).
Die Carbamino- und Hydroxylkohlenhydratreaktion.
1619. M. Siegfried. Zeit. Physiol. Chem. 46, 401-414, (1905).
Ueber die Bindung von Kohlensäure durch amphotere Amidokörper.
T = 25°. κ_{25} aq. = 2.5×10^{-6} ; sub.
1620. H. F. Sill. Zeit. Phys. Chem. 51, 577-602, (1905).
Ueber das Gleichgewicht zwischen einer Stickstoffbase und organischen Säuren in verschiedenen Lösungsmitteln. [Same as 1621.]
1621. H. F. Sill. Dis. Leipzig. (1905).
Ueber das Gleichgewicht zwischen einer Stickstoffbase und organischen Säuren in verschiedenen Lösungsmitteln. [Same as 1620.]
- Meas. E. Siller; see 1754, 1760.

- 1622.** I. Simon. Arch. Fisiol. 4, 594-604, (1907).
Ricerche sulla coagulazione delle albumine. I. Variazioni fisico-chimiche del siero per aggiunta di alcool.
T = 25°.
- 1623.** I. Simon. Arch. Fisiol. 5, 394-401, (1908).
Ricerche sulla coagulazione delle albumine. II. Variazioni fisico-chimiche del siero per aggiunta di acetone.
T = 25°.
- 1624.** I. Simon. Arch. Fisiol. 5, 402-406, (1908).
Ricerche sulla coagulazione delle albumine. III. Variazioni fisico-chimiche del siero per aggiunta di alcool metilico.
T = 25°.
- 1625.** I. Simon. Arch. Fisiol. 5, 470-476, (1908).
Ricerche sulla coagulazione delle albumine. IV. Variazioni fisico-chimiche del siero per aggiunta di alcool propilico.
T = 25°.
- 1626.** I. Simon. Arch. Fisiol. 5, 477-478, (1908).
Ricerche sulla coagulazione delle albumine. V. Variazioni fisico-chimiche del siero per aggiunta di alcool allilico.
T = 25°.
- 1626a.** I. Simon. Arch. Fisiol. 8, 361-382, (1910).
Ricerche sulla coagulazione delle albumine. VII. Variazioni fisico-chimiche del siero per aggiunta di sali di metalli pesanti.
T = 25°.
- J. L. Simonsen see W. H. Perkin, Jr.
W. Sinclair see W. H. Perkin, Jr.
- 1627.** H. A. Sirks. Rec. Trav. Chim. 27, 207-250, (1908).
Études sur les six acides dinitrobenzoiques. [Same as 1628 for k. Tables of Λ also given here.]
T = 25° to 40°. R. O. α is about 1×10^{-4} .
- 1628.** H. A. Sirks. Verslag Akad. Amsterdam. 15, 264-270, (1906-1907).
Verslag Akad. Amsterdam, English translation, 9, 280-286, (1906-1907.)
De zes isomere dinitrobenzoësuren. [Same as 1627 for k. It is indexed, as, Holleman, Sirks.]
Siākovskij see Szyszkowski.
P. Sisley see P. Barbier.
J. Sjöqvist. Ergebn. Physiol. 9, 241-333, (1910). See H. Euler.
- 1629.** S. Skinner. Jour. Chem. Soc. 73, 483-490, (1898).
Affinity constants of dihydroxymaleic, dihydroxyfumaric, dihydroxytartaric, and tartronic acids.
T = 25°. Hg. U. α aq. not sub.
- 1630.** Z. H. Skraup. Monatsh. 12, 107-145, (1891).
Ueber die Umwandlung der Maleinsäure in Fumarsäure. [Same as 1632.]
T = 22°, 58° and 96°. S. U.
- 1631.** Z. H. Skraup. Monatsh. 15, 775-786, (1894).
Ueber die Affinität einiger Basen in alkoholischer Lösung.
T = 25°.
- 1632.** Z. H. Skraup. Sitzber. Akad. Wien. 100, 2b, 124-162, (1891).
Ueber die Umwandlung der Maleinsäure in Fumarsäure. [Same as 1630.]
- 1633.** G. v. d. Sleen. Rec. Trav. Chim. 21, 209-251, (1902).
L'acide vinylglycolique (buténolique 1, 3) et ses transformations. [Same as 1634. k, but no Λ , is given in 300.]
R. O. α aq. sub.

- 1634.** G. v. d. Sleen. Dis. Basel. (1901).
 Ueber die α -Oxybutensäure (Vinyl-glycolsäure) und ihre Umlagerungen.
 [Same as 1633. See 300.]
Meas. G. v. d. Sleen; see 300.
- 1634a.** (W. H. Sloan. Jour. Am. Chem. Soc. 32, 946-949, (1910).
 On the conductivity of some concentrated aqueous solutions at zero.) [In-organic.]
 C. H. Sluiter see A. Hantzsch.
 D. D. Van Slyke see L. L. Van Slyke.
- 1635.** L. L. Van Slyke, D. D. Van Slyke. Am. Chem. Jour. 38, 383-456, (1907).
 The action of dilute acids upon casein when no soluble compounds are formed.
 $T = 25^\circ \pm 0.03^\circ$. κ aq. $= 1 - 1.8 \times 10^{-6}$; sub.
- 1636.** L. L. Van Slyke, D. D. Van Slyke. Am. Chem. Jour. 38, 619-626, (1907).
 The hydrolysis of the sodium salts of casein.
 $T = 25^\circ \pm 0.03^\circ$. κ aq. $= 1 - 1.8 \times 10^{-6}$; sub.
- 1637.** (W. A. Smith. Zeit. Phys. Chem. 25, 144-177, (1898).
 Ueber die stufenweise Dissociation zweibasischer organischer Säuren.) [Same as part of 1639.]
- 1638.** W. A. Smith. Zeit. Phys. Chem. 25, 193-264, (1898).
 Ueber die stufenweise Dissociation zweibasischer organischer Säuren, II. [Same as part of 1639.]
 $T = 25^\circ$. $\frac{1}{2}\kappa$ aq. sub.
- 1639.** W. A. Smith. Dis. Leipzig. (1898).
 Ueber die stufenweise Dissociation zweibasischer organischer Säuren. [Same as 1637 and 1638 together.]
Meas. W. A. Smith; see 817, 1661, 1662.
- 1639a.** This reference has been omitted intentionally.
- 1639b.** S. P. L. Sørensen. Biochem. Zeit. 21, 131-304, (1909). *Meas.* S. Palitzsch and R. Koefoed.
- Enzymstudien. II. Mitteilung. Ueber die Messung und die Bedeutung der Wasserstoffionenkonzentration bei enzymatischen Prozessen.
 $T = 18^\circ$. k_w at $18^\circ = 0.72 \times 10^{-14}$.
 W. Sokoloff see L. Tschugaeff.
 M. Solimene see G. Abati.
- 1640.** F. Sonneborn. Dis. Basel. (1902).
 Zur Kenntnis der Vinyllessigsäure. [Only vinylacetic acid and its sodium salt are given in 573.]
 F. Sonneborn see F. Fichter.
- Meas.* R. B. Sosman; see 1341.
- R. B. Sosman see A. A. Noyes, Y. Kato.
 J. F. Spencer see R. Abegg.
- 1641.** A. W. Speranskij. Jour. Russ. Phys.-chem. Soc. 28, 329-334, (1896).
 On chromium thiocyanates.
 $T = 25^\circ$.
- 1642.** (A. W. Speranskij, E. G. Goldberg. Jour. Russ. Phys.-chem. Soc. 32, 797-804, (1900).
 Electrolysis of solutions of metallic salts in organic solvents.)
 Speransky see Speranskij.
 Speyer see Cahn-Speyer.
 K. Spiro see L. J. Henderson.

1643. W. Spitzer. Arch. Gesamt. Physiol. 50, 551-573, (1891).
 Ueber die Benutzung gewisser Farbstoffe zur Bestimmung Affinitäten.
 C. H. G. Sprankling see W. A. Bone.
 " " " " see W. A. Bone, J. J. Sudborough.
 " " " " see H. Henstock.
1644. W. Spruck. Dis. Zürich. (1898).
 Ueber Additionsprodukte v. Aethylendiamin an Salse zweiwertiger Metalle.
 [Same as 1946.]
Meas. W. Spruck; see 1946.
 W. Stadler see A. Rosenheim.
- ?*Meas.* H. Stahl; see 448.
 B. D. Steele see S. Deakin, M. Scott.
 " " " see R. B. Denison.
 " " " see D. McIntosh.
1645. B. D. Steele, D. McIntosh. Proc. Chem. Soc. 19, 220-221, (1903).
 Conductivity of substances dissolved in certain liquified gases. Preliminary notice. [Qualitative.]
1646. B. D. Steele, D. McIntosh, E. H. Archibald. Zeit. Phys. Chem. 55, 129-199, (1906).
 Die Halogenwasserstoffsäuren als leitende Lösungsmittel. [Same as 1647.]
 $T = -100^{\circ}, -81^{\circ}$ and -50° .
1647. B. D. Steele, D. McIntosh, E. H. Archibald. Trans. R. Soc. London. A, 205, 99-167, (1906).
 The halogen hydrides as conducting solvents. Part I. The vapour pressures, densities, surface energies and viscosities of the pure solvents. Part II. The conductivity and molecular weights of dissolved substances. Part III. The transport numbers of certain dissolved substances. Part IV. The abnormal variations of molecular conductivity, etc. [Same as 1646.]
1648. L. Stein. Dis. Bonn. (1906).
 Ueber die Drehungsänderungen aktiver Oxyssäuren durch Zirkon- und Zinnverbindungen.
 $T = 25^{\circ}$. R. O.
1649. K. Steinitz. Dis. Berlin. (1906).
 Ein Beitrag zur Beeinflussung des Leitvermögens schwacher Elektrolyte in Wasser durch Zusätze von anderen nicht leitenden Substanzen.
 $T = 25^{\circ} \pm 0.02^{\circ}$. R. O. κ aq. $= 1.25 \times 10^{-4}$, or less; not sub.
1650. (H. v. Steinwehr. Zeit. Elektrochem. 7, 685-686, (1900-1901).
 Ueber die Gültigkeit des Massenwirkungsgesetzes bei starken Elektrolyten.)
 H. v. Steinwehr see F. Kohlrausch.
1651. D. Stenquist. Zeit. Elektrochem. 12, 860-862, (1906).
 Bestimmung der elektrischen Leitfähigkeit des Jod-, Brom- und Chlorkaliums in Aethyl- und Methylalkohol. [Same as 1652.]
 $T = 0^{\circ}$.
1652. D. Stenquist. Arkiv Kemi. 2, No. 25, 1-8, (1905-1907).
 Bestämning af elektriska ledningsförmågan för jod-, brom- och klorkalium i etyl- och metylalkohol. [Same as 1651.]
1653. (C. Stephan. Ann. Physik. (3), 17, 673-701, (1882).
 Beiträge zu den Beziehungen zwischen Fluidität und galvanischem Leitungsvermögen.) [Inorganic.]
 J. Stephenson see Berkeley, E. G. J. Hartley.
1654. E. Stern. Zeit. Phys. Chem. 50, 513-559, (1905).
 Die chemische Kinetik der Benzoinsynthese (Cyanionenkatalyse). [Same as 1655.]
 $T = 0^{\circ}, 25^{\circ}$ and 60° . R. O.

- 1655. E. Stern.** Dis. Heidelberg. (1904).
Die chemische Kinetik der Benzoinsynthese (Cyanionenkatalyse). [Same as 1654.]
- 1655a. G. N. Stewart.** Jour. Physiol. 24, 211-238, (1899).
The behaviour of the haemoglobin and electrolytes of the coloured corpuscles when blood is laked.
T = 5°. R. O.
- 1655b. G. N. Stewart.** Jour. Physiol. 24, 460-463, (1899).
The effect on the molecular concentration and electrical conductivity of muscle extracts of removal of the proteids.
T = 5°. R. O.
- 1655c. G. N. Stewart.** Jour. Physiol. 26, 470-496, (1900-1901).
The conditions that underlie the peculiarities in the behaviour of the coloured blood-corpuscles to certain substances.
T = 5°. R. O.
- 1656. J. Stieglitz.** Am. Chem. Jour. 39, 29-63, (1908).
Studies in catalysis. I. The catalysis of esters and of imidoesters by acids. [See 439 and 1233 for measurements.]
- 1657. J. Stieglitz.** Am. Chem. Jour. 39, 166-183, (1908). *Meas. by I. H. Derby and W. McCracken.*
Studies in catalysis. II. The catalysis of imidoesters. [k is same as in 439 and 1233 together.]
- 1658. (J. Stieglitz.** Jour. Am. Chem. Soc. 30, 946-954, (1908).
Note on the solubility product.)
- 1659. J. Stieglitz, I. H. Derby.** Am. Chem. Jour. 31, 449-458, (1904).
A study of hydrolysis by conductivity methods.
T = 25° ± 0.01°. κ aq. = 2.0×10^{-6} .
- 1660. J. Stieglitz, H. T. Upson.** Am. Chem. Jour. 31, 458-502, (1904).
Meas. H. T. Upson.
The molecular rearrangement of aminophenyl alkyl carbonates.
T = 0°. Hg. U. $k_w = 1.2 \times 10^{-14}$. [The values of k calculated with k_w for 0°, are about 0.1 of those given in this article.]
C. M. Stine see H. C. Jones.
- 1661. H. Stobbe.** Ann. Chemie. 308, 114-155, (1899). *Meas. Foote, and W. A. Smith.*
Condensation Acetophenons mit Bernsteinsäureester.
- 1662. H. Stobbe.** Ann. Chemie. 321, 105-126, (1902). *Meas. W. A. Smith.*
Condensation des Aethylmethylketons mit Bernsteinsäureester.
- 1663. H. Stobbe, R. Haertel.** Ann. Chemie. 370, 99-129, (1909).
Lichtabsorption, Basenstärke, Constitution und Salze der Ketone der Dibenzalaceton- und Dibenzalcyklopentanoneihe.
- 1664. H. Stobbe, K. Russwurm.** Ann. Chemie. 308, 156-174, (1899).
Meas. Foote.
Condensation des Desoxybenzoin mit Bernsteinsäureester.
- 1665. H. Stobbe, S. Seydel.** Ann. Chemie. 370, 129-141, (1909).
Lichtabsorption, Basenstärke, Constitution und Salze einiger ungesättigter cyclischer Ketone, Ketonsäuren und Ketonsäureester.
- 1666. F. Stohmann, C. Kleber.** Jour. Prakt. Chem. (2), 45, 475-499, (1892).
Calorimetrische Untersuchungen. Hydrierung geschlossener Ringe; die Constitution der Camphersäure vom thermo-chemischen Standpunkte.
- 1667. F. Stohmann, C. Kleber, H. Langbein, P. Offenbauer.** Jour. Prakt. Chem. (2), 49, 99-129, (1894).
Calorimetrische Untersuchungen. Ueber den Wärmewerth der aliphatischen Säuren. [Same as 1668.]

- 1668.** F. Stohmann, C. Kleber, H. Langbein, P. Offenhauer. Ber. Verhand. Sächs. Ges. Wis. 45, 604-658, (1893).
 Ueber den Wärmewerth der aliphatischen Säuren. [Same as 1667.]
- 1669.** F. Stohmann, H. Langbein. Jour. Prakt. Chem. (2), 49, 483-501, (1894). *Meas.* [H.] *Wislicenus*.
 Calorimetrische Untersuchungen. Ueber die thermischen Vorgänge bei der Bildung einiger Aminsäuren und Nitrile. [Same as 1671. Qualitative.]
- 1670.** F. Stohmann, H. Langbein. Jour. Prakt. Chem. (2), 50, 388-400, (1894). *#Meas.* *Paul*.
 Calorimetrische Untersuchungen. Ueber den Wärmewerth isomerer Säuren von der Zusammensetzung $C_7H_8O_2$ und $C_8H_8O_2$. [Same as 1672, except that Λ of o-oxy-o-toluic acid is not given here.]
- 1671.** F. Stohmann, H. Langbein. Ber. Verhand. Sächs. Ges. Wis. 46, 49-72, (1894). *Meas.* [H.] *Wislicenus*.
 Ueber die thermischen Vorgänge, etc. [Same as 1669.]
- 1672.** F. Stohmann, H. Langbein. Ber. Verhand. Sächs. Ges. Wis. 46, 226-251, (1894). *#Meas.* *Paul*.
 Ueber den Wärmewerth, etc. [Same as 1670 with addition of Λ of o-oxy-o-toluic acid.]
- 1673.** F. Stohmann, R. Schmidt. Jour. Prakt. Chem. (2), 53, 345-369, (1896). *Meas.* *H. Wislicenus, and Dittich*.
 Calorimetrische Untersuchungen. Ueber den Wärmewerth der Hippursäure, ihrer Homologen und der Anisursäure. [Same as 1674.]
- 1674.** F. Stohmann, R. Schmidt. Ber. Verhand. Sächs. Ges. Wis. 47, 375-399, (1895). *Meas.* *H. Wislicenus, and Dittich*.
 Ueber den Wärmewerth der Hippursäure, ihrer Homologen und der Anisursäure. [Same as 1673.]
- 1675.** (L. Storch. Zeit. Phys. Chem. 19, 13-19, (1896).
 Ueber das Verdünnungsgesetz der Elektrolyte.) [Inorganic.]
Meas. *W. Storer*; see 494.
- 1676.** F. Straus, O. Ecker. Ber. Deutsch. Chem. Ges. 39, 2977-3006, (1906).
 Ueber Dibenzalaceton und Triphenylmethan.
 $T = 0^\circ$.
- 1676a.** W. Strecker. Ber. Deutsch. Chem. Ges. 43, 1131-1144, (1910).
 Einwirkung von Organomagnesiumverbindungen auf Bortrichlorid, Chlorschwefel, sowie auf das Chlorid und die Ester der schwefligen Säure.
 $T = 25^\circ$.
- 1677.** (F. Streintz. Ann. Physik. (4), 3, 1-19, (1900).
 Ueber die elektrische Leitfähigkeit von gepressten Pulvern.) [Inorganic. Same as 1679.]
- 1678.** (F. Streintz. Ann. Physik. (4), 9, 854-885, (1902).
 Ueber die elektrische Leitfähigkeit von gepressten Pulvern.) [Same as 1680. Inorganic.]
- 1679.** (F. Streintz. Sitzber. Akad. Wien. 109, 2a, 221-241, (1900).
 Ueber die elektrische, etc.) [Same as 1677].
- 1680.** (F. Streintz. Sitzber. Akad. Wien. 111, 2a, 345-378, (1902).
 Ueber die elektrische, etc.) [Same as 1678.]
- 1681.** (N. Strindberg. Zeit. Phys. Chem. 14, 161-162, (1894).
 Ueber die Aenderung der Leitfähigkeit einer Lösung durch Zusatz von kleinen Mengen eines Nichtleiters.) [Inorganic.]
- 1682.** D. Strömholm. Ber. Deutsch. Chem. Ges. 32, 2892-2911, (1899).
 Ueber Diäthylendisulfidthetin.
B. C. Stuer see *A. Hantzsch*.
J. J. Sudborough see *W. A. Bone*.

1633. J. J. Sudborough, D. J. Roberts. Jour. Chem. Soc. 87, 1840-1854, (1905).
Esterification constants of substituted acrylic acids. Part I. [Quoted from 1299.]
H. Süss is same as J. H. Süss.
1634. J. H. Süss. Monatsb. 26, 1331-1342, (1905).
Leitfähigkeitsmessungen an organischen Säuren. [Same as 1635.]
R. O.
1635. J. H. Süss. Sitzber. Akad. Wien. 114, 2b, 867-878, (1905).
Leitfähigkeitsmessungen an organischen Säuren. [Same as 1634.]
Meas. [J.] H. Süss; see 1906, 1934, 1935.
1636. O. Šulc. Zeit. Phys. Chem. 32, 625-629, (1900).
Leitfähigkeit einiger natriumsubstituierter Nitroparaffine.
T = 25°. κ aq. about 2×10^{-6} ; not sub.
1637. E. C. Sullivan. Zeit. Phys. Chem. 28, 523-545, (1899).
Studien über einige Jodverbindungen.
T = 25°.
- E. Sunde see H. Goldschmidt.
- 1637a. (A. F. Sundell. Zeit. Phys. Chem. 70, 539-550, (1910).
Elektrolysen betraktad ur energetisk synpunkt.)
1638. (W. Sutherland. Phil. Mag. (6), 3, 161-177, (1902).
Ionization, ionic velocities, and atomic sizes.) [Quoted.]
1639. (W. Sutherland. Phil. Mag. (6), 14, 1-35, (1907).
Ionization in solutions and two new types of viscosity.) [Quoted.]
1690. F. Swarts. Rec. Trav. Chim. 25, 244-252, (1906).
Sur l'acide difluorchloracétique. [Same as 1699.]
T = 25°.
1691. F. Swarts. Zeit. Phys. Chem. 16, 118-124, (1895).
Einige Betrachtungen über elektrische Leitfähigkeitskurven. [Qualitative.]
1692. (F. Swarts. Bul. Acad. Belg. (3), 28, 130-131, (1894).
Sur la conductibilité électrique de l'acide dichlorfluoracétique.)
[Published in full in 1700.]
1693. F. Swarts. Bul. Acad. Belg. (3), 31, 675-688, (1896).
Sur l'acide fluoracétique.
S. U. κ aq. = 1.5×10^{-6} .
1694. F. Swarts. Bul. Acad. Belg. (3), 35, 849-868, (1898).
Sur l'acide dibromfluoracétique.
T = 25.1° and 25.2°. S. U.
1695. F. Swarts. Bul. Acad. Belg. (1902), 731-760.
Sur l'alcool bifluoré.
S. U.
1696. F. Swarts. Bul. Acad. Belg. (1903), 597-633.
Sur l'acide difluoracétique.
T = 25°. R. O.
1697. F. Swarts. Bul. Acad. Belg. (1904), 762-801.
Sur quelques amines à radical alcoolique fluoré.
[T probably 25°.] R. O. κ aq. = 2×10^{-7} ; sub.
1698. F. Swarts. Bul. Acad. Belg. (1904), 955-969.
Sur quelques amines à radical alcoolique fluoré.
[No data of T nor of unit, but see 1697.]
1699. F. Swarts. Bul. Acad. Belg. (1906), 42-51.
Sur l'acide difluorchloracétique. [Same as 1690.]
T = 25°.

1700. F. Swarts. *Mém. Acad. Belg.* 51, Mém. 3. (1894-1895).
 Sur la conductibilité électrique de l'acide dichlorfluoroacétique. [Abstract in 1692 is qualitative.]
 T is about 25°. S. U. κ aq. = $1.49-1.6 \times 10^{-6}$.
1701. F. Swarts. *Mém. Acad. Belg.* 54, Mém. 2, (1896).
 Sur l'acide fluorchlorbromacétique.
 T = 25°. S. U. κ aq. = 1.9×10^{-6} .
 R. Swinne see P. Walden.
1702. E. C. Szarvasy. *Jour. Chem. Soc.* 77, 603-608, (1900).
 Electrolysis of the nitrogen hydrides and of hydroxylamine.
1703. B. Szyzkowski. *Jour. Russ. Phys.-chem. Soc.* 28, 664-683, (1896).
 The question of the dissociation constants of organic acids. [Same as 1704.]
 T = 25°.
1704. B. Szyzkowski. *Zeit. Phys. Chem.* 22, 173-188, (1897).
 Ueber die Affinitätsgrößen organischer Säuren und ihre Beziehungen zur Konstitution derselben. [Same as 1703.]
 T = 25°.
1705. B. v. Szyzkowski. *Zeit. Phys. Chem.* 58, 420-424, (1907).
 Beitrag zur Kenntnis der Neutralsalzwirkung. [Indicators.]
- 1705a. B. v. Szyzkowski. *Zeit. Phys. Chem.* 73, 269-283, (1910).
 Ueber das Wesen der Neutralsalzwirkung. [Indicators.]
Meas. B. Szyzkowski; see 1034, 1474.
1706. B. Szyzkowski, S. Reformatsky. *Jour. Russ. Phys.-chem. Soc.* 33, 158-163, (1901).
 Synthesis and properties of α -dimethyl- β -ethylethylenelactic acid.

T.

1707. J. Tafel, J. Dodt. *Ber. Deutsch. Chem. Ges.* 40, 3757-3759, (1907).
 Acidität der Desoxyxanthine.
 T = 25°.
1708. G. Tammann. *Ann. Physik.* (3), 69, 767-780, (1899).
 Ueber die Abhängigkeit des elektrischen Leitvermögens vom Druck.
 T = 0° to 40°.
- 1708a. G. Tammann. *Zeit. Elektrochem.* 16, 592-599, (1910).
 Ueber den Einfluss des Druckes auf das elektrische Leitvermögen von Lösungen.
 T = 0°.
1709. G. Tammann. *Zeit. Phys. Chem.* 6, 237-240, (1890).
 Ueber das Leitvermögen von Niederschlagsmembranen.
 T = 18.5°.
1710. (G. Tammann. *Zeit. Phys. Chem.* 17, 725-736, (1895).
 Ueber den Einfluss des Drucks auf das elektrische Leitvermögen von Lösungen.) [Quoted.]
 G. Tammann see A. Bogojawlensky.
1711. S. M. Tanatar, E. K. Kurovskij. *Jour. Russ. Phys.-chem. Soc.* 39, 936-943, (1907).
 Some salts of beryllium and zirconium. [The existence of many of these salts is denied by Parsons, Sargent, *Jour. Am. Chem. Soc.* 31, 1202, (1909).]
1712. S. M. Tanatar, E. K. Kurovskij. *Jour. Russ. Phys.-chem. Soc.* 39, 1630-1632, (1907).
 Benzoyl salts of beryllium and zirconium. [See criticism under 1711.]

1713. B. Tarugi, G. Tomasinelli. Arch. Fisiol. 5, 581-590, (1908).
Costanti fisico-chimiche del sudore dell'uomo ottenuto col bagno di luce.
T = 25°.
M. Taylor see J. W. McBain.
W. W. Taylor see C. Ranken.
1714. (S. Tereschin. Verhand. Deutsch. Phys. Ges. 11, 211-214, (1909).
Ueber die Beziehung zwischen Dichte und Dissoziationsgrad wässriger
Salzlösungen.) [Quoted. A simplification of 821.]
Tessarini see Zanninovich-Tessarini.
A. Thal see K. A. Hofmann, H. Kirmreuther.
1715. (A. Thiel. Zeit. Anorg. Chem. 59, 371-372, (1908).
Notiz betreffend die Stärke der zweiten Stufe von Phenolcarbon- und Phenol-
sulfonsäuren.) [Criticism of 1346. See 1718 for measurements.]
1716. (A. Thiel. Zeit. Elektrochem. 15, 1-4, (1909).
Ueber das Leitfähigkeitsminimum in der Titrationskurve mittelstarker und
schwacher Säuren.) [Theoretical. See 294 and 295.]
1717. A. Thiel, H. Roemer. Zeit. Phys. Chem. 61, 114-126, (1907-
1908).
Ein Beitrag zur Kenntnis der Verteilung einer Base zwischen zwei Säuren.
T = 25°. R. O.
1718. A. Thiel, H. Roemer. Zeit. Phys. Chem. 63, 711-761, (1908).
Vergleichende Untersuchungen über Basizität und Stärke von Säuren und
Phenolen. [Most is given in 1508. Some new measurements are given here.
See 1228.]
T = 25°. R. O. κ aq. is about 1×10^{-5} .
1719. A. Thiel, A. Schumacher, H. Roemer. Ber. Deutsch. Chem. Ges. 38,
3860-3862, (1905).
Zur Kenntniss der sauren Function des aromatischen Hydroxyls. [Qualita-
tive.]
1720. J. Thiele, H. Ingle. Ann. Chemie. 287, 233-265, (1895). *Meas. M.*
Bauer.
Ueber einige Derivate des Tetrazols.
T = 25°.
1721. O. Thiele. Zeit. Physiol. Chem. 37, 251-301, (1902-1903).
Ueber Uroferrinsäure. [Qualitative.]
N. G. Thomas see H. Hartley.
M. deK. Thompson see H. M. Goodwin.
1722. (J. J. Thomson. Jour. Phys. (3), 5, 165-167, (1896).
Décharge de l'électricité produite par les rayons de Röntgen, effets produits
par ces rayons sur les diélectriques qu'ils traversent.) [Same as 1723.]
1723. (J. J. Thomson. Proc. R. Soc. London. 59, 274-276, (1895-1896).
On the discharge of electricity produced by the Röntgen rays and the effects
produced by these rays on dielectrics through which they pass.) [Same as
1722.]
J. F. Thorpe see K. Auwers.
" " see F. H. Howies.
T. Tickle see J. N. Collie.
1724. S. J. Tijmstra Bz. Zeit. Phys. Chem. 49, 345-367, (1904).
Leitfähigkeitsbestimmungen an Lösungen von Natrium in absoluten und mit
Wasser verdünnten Alkoholen und in Gemischen von zwei Alkoholen. [Part
is same as 1725. Propyl alcohol and mixtures of ethyl and methyl alcohols
are also given here.]
T = 18°. R. O. κ aq. = 1.3×10^{-6} .

- 1725. S. Tijnstra Bz.** Verslag Akad. Amsterdam, 12, 166-169, (1903-1904).
Verslag Akad. Amsterdam, English translation, 6, 104-107, (1903-1904).
De electrolytische geleidbaarheid van oplossingen an natrium in mengsels van aethyl of methylalcohol + water. [Given in 1724.]
T = 18°.
- Timoféeff see Timofejev.
- 1726. (V. F. Timofejev.** Jour. Russ. Phys.-chem. Soc. 41, 241-244, (1909).
Mendelejeff number.
The influence of the functional distinctions of the ingredients of the solution on the curve of the solution.)
- 1727. (V. F. Timofejev, L. D. Kobozev.** Jour. Russ. Phys.-chem. Soc. 36, 255-275, (1904).
Decomposition of trichloroacetic acid and some of its salts in aqueous solution.) [Velocity of reaction.]
- 1728. A. Tingle.** Jour. Am. Chem. Soc. 21, 792-803, (1899).
The influence of substituents on the electrical conductivity of benzoic acid.
T = 25°. Hg. U. Mean κ aq. = 4.4×10^{-6} ; sub.
Meas. I. Tiščenko; see 1760a.
- 1729. A. W. Titherley.** Jour. Chem. Soc. 79, 391-411, (1901). Meas. W. B. Davidson.
Preparation of substituted amides from the corresponding sodamides.
T = 25°.
- 1729a. H. T. Tizard.** Jour. Chem. Soc. 97, 2477-2490, (1910).
The colour changes of methyl-orange and methyl-red in acid solution. [k is given in 1729c.]
T = 18° and 25°. $k_w \times 10^{14} = 0.6$ at 18°; = 1.1 at 25°.
- 1729b. H. T. Tizard.** Jour. Chem. Soc. 97, 2490-2495, (1910).
The hydrolysis of aniline salts measured colourimetrically.
T = 25°. $k_w \times 10^{14} = 1.1$ at 25°.
- 1729c. H. T. Tizard.** Proc. Chem. Soc. 26, 225, (1910).
The colour changes, etc. [Given in 1729a.]
H. T. Tizard see N. V. Sidgwick.
G. Tomasinelli see B. Tarugi.
G. Tommasi see N. Parravano.
- 1730. H. A. Torrey, W. MacPherson.** Jour. Am. Chem. Soc. 31, 579-583, (1909).
Some azo dyes from p-aminoacetophenone.
- 1731. M. Tortelli.** Ber. Deutsch. Chem. Ges. 28, 1702-1707, (1895).
Zur Constitution der Fuchsine. [Text an abridgement of 1732, but has full tables of Λ .]
- 1732. M. Tortelli.** Gaz. Chim. Ital. 25, II, 233-248, (1895).
Sulla costituzione delle fucsine. [Same as 1731.]
- 1733. N. E. Tousley, M. Gomberg.** Jour. Am. Chem. Soc. 26, 1516-1523, (1904).
Some tri-p-tolylmethane derivatives.
T = 20°.
- 1734. O. F. Tower.** Jour. Am. Chem. Soc. 22, 501-521, (1900).
The precipitation of the sulphides of nickel and cobalt in an alkaline tartrate solution, together with an investigation into the nature of certain tartrates of these metals. [The measurements in 1735 are more accurate.]
T = 18°. R. O.

- 1735. O. F. Tower.** Jour. Am. Chem. Soc. 24, 1012-1023, (1902).
On the constitution of certain organic salts of nickel and cobalt as they exist in aqueous solutions. [Also corrects 1734.]
 $T = 18^{\circ} \pm 0.1^{\circ}$. R. O. α aq. $= 2.0-3.0 \times 10^{-6}$; sub.
- 1736. O. F. Tower.** Jour. Am. Chem. Soc. 27, 386-391, (1905).
Note on the constitution of certain organic salts of nickel and cobalt as they exist in aqueous solution.
 $T = 18^{\circ}$. R. O. α aq. $= 1.8 \times 10^{-6}$; sub.
- 1737. O. F. Tower.** Zeit. Phys. Chem. 18, 17-50, (1895).
Studien über Superoxyd-Elektroden.
 $T = 15^{\circ}$.
- *1738. (I. Traube.** Ber. Deutsch. Chem. Ges. 42, 86-94, (1909).
Ueber den Haftdruck. Beitrag zur Theorie der Lösungen.) [Summary of 1739.]
- *1739. (I. Traube.** Verhand. Deutsch. Phys. Ges. 10, 880-930, (1908).
Der Haftdruck. Beitrag zur Theorie der Lösungen.) [Summary with data in 1738.]
- 1740. (J. Traube.** Ann. Physik. (3), 62, 490-506, (1897).
Ueber osmotischen Druck und electrolytische Dissociation.) [Theoretical.]
- 1741. J. Traube.** Ber. Deutsch. Chem. Ges. 24, 1859-1864, (1891).
Zur Dissociationshypothese. Ueber elektrisches Leitungsvermögen und Gefrierpunkt.
 $T = 15^{\circ}$ and 18° . Hg. U. α aq. sub.
- 1742. (J. Traube.** Ber. Deutsch. Chem. Ges. 25, 2989-2993, (1892).
Die Hypothesen der electrolytischen Dissociation und der Jonisation.)
- 1743. (J. Traube.** Chem. Ztg. 26, 2, 1071-1074, (1902).
Ueber die modernen Lösungstheorien. Die osmotische Theorie und die electrolytische Dissociationstheorie.)
- 1744. (J. Traube.** Phil. Mag. (6), 8, 158-165, (1904).
A theory of solutions.)
- 1745. J. E. Trevor.** Zeit. Phys. Chem. 10, 321-353, (1892).
Ueber die Messung kleiner Dissociationsgrade.
- 1746. H. Trey.** Zeit. Phys. Chem. 22, 424-463, (1897).
Ein weiterer Beitrag zur Biorotation der Glykose.
 $T = 25^{\circ}$. S. U. α_{25} aq. $= 2 \times 10^{-6}$; sub.
- 1747. H. Trey.** Zeit. Phys. Chem. 46, 620-719, (1903).
Ein Beitrag zu den Rotationserscheinungen der Laktose.
 $T = 25^{\circ}$. S. U.
- 1748. P. A. Trübsbach.** Zeit. Phys. Chem. 16, 708-723, (1895).
Die Affinitätsgrößen der Ureide und Isonitrosoderivate.
 $T = 25^{\circ}$. α aq. $= 1.5-2.5 \times 10^{-6}$; sub. for some compounds; no statement in other cases.
- 1749. P. Trummel.** Dis. Bonn. (1908). Meas. with A. Schubert.
Beiträge zur Kenntnis der Konstitution der Citraconsäure und ihrer Homologen.
R. O. α aq. less than 2×10^{-6} ; sub.
- 1750. L. Tschugaeff.** Ber. Deutsch. Chem. Ges. 38, 2899-2914, (1905).
Ueber complexe Verbindungen organischer Imide. Succinimidkupfer-Derivate.
 $T = 25^{\circ}$.
- 1751. L. Tschugaeff.** Ber. Deutsch. Chem. Ges. 39, 2692-2702, (1906).
Ueber Kobaltidioximine.
 $T = 25^{\circ}$.

* I. Traube is the same name as J. Traube.

- 1752. L. Tschugaeff.** Ber. Deutsch. Chem. Ges. 39, 3190-3201, (1906).
Ueber complexe Verbindungen organische Imide; Succinimidnickel-Derivate.
[Part is in 1753.]
T = 25°.
- 1753. L. Tschugaeff.** Ber. Deutsch. Chem. Ges. 40, 3498-3504, (1907).
Ueber Kobalti-dioximine. [Given in 1759.]
T = 25°.
- 1754. L. Tschugaeff.** Ber. Deutsch. Chem. Ges. 41, 2226-2232, (1908).
Meas. E. Siller.
Ueber eine neue Komplexsäure. (Studien über Kobaltidioximine III). [Same
as 1760.]
T = 25°.
- 1755. L. A. Tschugaeff.** Jour. Russ. Phys.-chem. Soc. 39, 1262-1323,
(1907).
Investigations in the sphere of complex compounds. I. Complex compounds
of organic imides.
T = 25°.
- 1756. L. A. Tschugaeff.** Jour. Russ. Phys.-chem. Soc. 41, 285-286, (1909).
Mendelejeff number.
A new series of complex acids.
T = 25°.
- 1757. L. A. Tschugaeff.** Jour. Russ. Phys.-chem. Soc. 41, 184-252, (1909).
Investigations in the sphere of complex compounds. III. Metallic derivatives
of α -dioximes.
T = 25°.
- 1758. L. A. Tschugaeff.** Jour. Russ. Phys.-chem. Soc. 41, 253-287,
(1909).
Investigations in the sphere of complex compounds. IV. On the conditions
of formation of complex compounds of the metal-ammonia type. [Given in
1752.]
T = 25°.
- 1759. L. A. Tschugaeff.** Jour. Russ. Phys.-chem. Soc. 41, 1332-1354,
(1909).
Investigations in the sphere of complex compounds. V. The non-ionized
cobalt dioximines. [Part is same as 1753.]
T = 25°.
- 1760. L. A. Tschugaeff.** Jour. Russ. Phys.-chem. Soc. 41, 1355-1368,
(1909). *Meas. E. Siller.*
Investigations in the sphere of complex compounds. VI. A new series of
complex acids. [Same as 1754.]
T = 25°.
- 1760a. L. A. Tschugaeff.** Jour. Russ. Phys.-chem. Soc. 42, 1466-1487,
(1910). *Meas. A. Postinkov and I. Tischenko.*
Investigations in the sphere of complex compounds. VII. On some complexes
made from dioximines.
T = 25°.
- 1761. L. Tschugaeff.** Zeit. Anorg. Chem. 46, 144-169, (1905).
Ueber komplexe Verbindungen der α -Dioxime.
T = 25°.
- 1762. L. Tschugaeff, W. Sokoloff.** Ber. Deutsch. Chem. Ges. 40, 3461-
3465, (1907).
Ueber einige Komplexverbindungen des optisch-aktiven l-Propylendiamins.
T = 25°.

1763. C. Tubandt. *Ann. Chemie.* 339, 41-93, (1905).
Quantitative Bestimmung des Natriumalkoholats mit Menthon. [Given in 1765.]

$T = 25^{\circ}$. $\kappa_{aq.} = 3.7 \times 10^{-6}$.

1764. (C. Tubandt. *Ann. Chemie.* 354, 259-324, (1907).
Zur Kenntniss der Reaktionskinetik in nichtwässrigen Lösungen.) [Inversion of menthone by alcohols and acids. Given in 1765.]

1765. C. Tubandt. *Dis. Halle.* (1904).
Die Inversionsgeschwindigkeit des Menthons. [Same as 1763 and 1764 together.]

1766. B. B. Turner. *Am. Chem. Jour.* 40, 558-574, (1908).
The limiting conductivity and degree of ionization of alcoholic solutions.
 $T = 0^{\circ}$ to 50° . R. O.

1767. D. Turner. *Nature.* 60, 245, (1899).
The electrical resistance of the blood. [Abstract of 1769.]
 $T = 60^{\circ}$ F. [$= 15.6^{\circ}$.]

1768. D. Turner. *Nature.* 66, 127, (1902).
The electrical resistance of the blood.

1769. D. Turner. *Trans. R. Scot. Soc.* 16, 6-7, (1906).
On an apparatus for measuring the electrical resistance of the blood, with some deductions therefrom. [Abstract is given in 1767.]
 $T = 60^{\circ}$ F. [$= 15.6^{\circ}$.]

W. E. S. Turner see A. Findlay.
Tymstra see Tijmstra.

U.

Meas. Udby; see 654.
B. af Ugglas see H. Euler.
Meas. H. T. Upson; see 1660.
H. T. Upson see J. Stieglitz.
A. Usoff see G. Bredig.

V.

A. Vagt see A. Hantzsch.
1770. P. Vaillant. *Compt. Rend.* 137, 849-851, (1903).
Sur la couleur des solutions aqueuses de méthylorange et le changement qu'y déterminent les acides.

$T = 25^{\circ}$.

1771. C. Vallée. *Ann. Chim. Phys.* (8), 15, 331-432, (1908).
Recherches sur les isocyanates de phényle, de naphtyle et de menthyle.
van see the letter beginning the next word, as under de.

1772. W. R. Veazey. *Dis. Johns Hopkins.* (1907).
The conductivity and viscosity of solutions of certain salts in water, methyl alcohol, ethyl alcohol, acetone and binary mixtures of these solvents. [Same as 922.]

$T = 0^{\circ}$ and 25° . S. U. $\kappa_{aq.}$ is about 1×10^{-6} .

W. R. Veazey see H. C. Jones.
A. v. Vegesack see W. Biltz.
A. Veit see A. Hantzsch.

1773. V. H. Veley. *Jour. Chem. Soc.* 91, 153-175, (1907).
The affinity constants of aminocarboxylic and aminosulphonic acids as determined by the aid of methyl-orange. [See 1781 for method. Gives only relative values. Abstract in 1783.]

- 1774. V. H. Veley.** Jour. Chem. Soc. 91, 1246-1251, (1907).
The affinity constants of aminosulphonic acids as determined by the aid of methyl-orange. [Gives only relative values. Abstract given in 1784.]
- 1775. V. H. Veley.** Jour. Chem. Soc. 93, 652-666, (1908).
The affinity constants of bases as determined by the aid of methyl-orange.
T = 12° to 18°.
- 1776. V. H. Veley.** Jour. Chem. Soc. 93, 2114-2122, (1908).
The affinity of certain alkaloids for hydrochloric acid. [Summary in 1787 is qualitative.]
T = 10° to 20°.
- 1777. V. H. Veley.** Jour. Chem. Soc. 93, 2122-2144, (1908).
The affinity constants of bases as determined by the aid of methyl-orange.
T = 10° to 20°.
- 1778. V. H. Veley.** Jour. Chem. Soc. 95, 1-8, (1909).
The affinity values of tropine and its derivatives. [Abstract in 1789 has some data.]
T = 14° to 18°.
- 1779. V. H. Veley.** Jour. Chem. Soc. 95, 758-767, (1909).
The affinity values of certain alkaloids. [Summary given in 1790.]
T = 15° to 20°.
- 1780. (V. H. Veley.** Phil. Mag. (6), 11, 73-81, (1906).
A modified form of apparatus for the determination of the dielectric constants of non-conducting liquids.)
- 1781. V. H. Veley.** Zeit. Phys. Chem. 57, 147-167, (1906).
Ueber die Reaktionen zwischen Säuren und Methylorange.
- 1782. (V. H. Veley.** Zeit. Phys. Chem. 61, 464-467, (1907-1908).
Ueber die Reaktionen zwischen Säuren und Methylorange.)
- 1783. (V. H. Veley.** Proc. Chem. Soc. 22, 313-314, (1906).
The affinity constants of aminocarboxylic and aminosulphonic acids as determined by the aid of methyl-orange.) [No data. See 1773.]
- 1784. (V. H. Veley.** Proc. Chem. Soc. 23, 179-180, (1907).
The affinity values of aminosulphonic acids, etc.) [An abstract of 1774.]
- 1785. (V. H. Veley.** Proc. Chem. Soc. 23, 284-285, (1907).
The affinity constants of bases as determined by the aid of methyl-orange.)
- 1786. (V. H. Veley.** Proc. Chem. Soc. 24, 50, (1908).
The affinity constants of bases as determined by the aid of methyl-orange.) [Qualitative. A summary of 1775.]
- 1787. (V. H. Veley.** Proc. Chem. Soc. 24, 234-235, (1908).
The affinity of certain alkaloids for hydrochloric acid.) [Summary of 1776.]
- 1788. (V. H. Veley.** Proc. Chem. Soc. 24, 238, (1908).
The affinity constants of bases as determined by the aid of methyl-orange.) [Summary of 1777.]
- 1789. V. H. Veley.** Proc. Chem. Soc. 24, 280-281, (1908).
The affinity values of tropine and its derivatives. [Summary of 1778 with some data.]
- 1790. V. H. Veley.** Proc. Chem. Soc. 25, 115-116, (1909).
The affinity values of certain alkaloids. [Summary of 1779.]
- 1791. A. Vesterberg.** Arkiv Kemi. 2, no. 37, 1-18, (1905-1907).
Försök öfver hydrolys af salter i vattenhaltig alkohol.
T = 18°.
- 1792. (G. Vicentini.** Atti Accad. Torino. 19, 832 and 897-898, (1883-1884).
Sulla conducibilità elettrica delle soluzioni alcooliche di alcuni cloruri.) [Inorganic. A summary of 1794.]

- 1793.** (G. Vicentini. Atti Accad. Torino. 20, 869-895, (1884-1885).
Sulla conducibilità elettrica dei sali in soluzioni acquose molto diluite.) [Inorganic.]
- 1794.** (G. Vicentini. Mem. Accad. Torino. (2), 36, 385-404, (1885).
Sulla conducibilità elettrica delle soluzioni alcoliche di alcuni cloruri.) [Inorganic. Summary given in 1792.]
- 1795.** (G. Vicentini. Atti Ist. Veneto. (6), 2, 1699-1726, (1883-1884).
Sulla conducibilità elettrica delle soluzioni saline acquose molto diluite.) [Inorganic.]
- 1796.** L. Vignon. Bul. Soc. Chim. (4), 1, 273-279, (1907).
Teinture et ionisation. [Same as 1799 and 1800a for Λ , but also gives κ .]
T = 18° to 90°. Legal ohms.
- 1797.** L. Vignon. Bul. Soc. Chim. (4), 5, 492-495, (1909).
Sur les propriétés colorantes et tinctoriales de l'acide picrique. [Same as 1800
T = 18°, 70° and 80°. and 1800c.]
- 1798.** L. Vignon. Bul. Soc. Chim. (4), 5, 495-500, (1909).
Conductibilité électrique de certains bains de teinture. [Same as 1800b.]
T = 15° to 100°.
- 1799.** L. Vignon. Compt. Rend. 144, 81-83, (1907).
Teinture et ionisation. [Same as 1796 for Λ . Same as 1800a.]
- 1800.** L. Vignon. Compt. Rend. 148, 844-846, (1909).
Sur les propriétés colorantes, etc. [Same as 1797 and 1800c.]
- 1801.** L. Vignon, E. Évieux. Bul. Soc. Chim. (4), 3, 1012-1019, (1908).
Chaleur de neutralisation de l'acide acétique et de l'acide benzoïque par l'aniline en milieu benzénique. [Part is same as 1803. Salts of toluidines are also given here.]
- 1802.** L. Vignon, E. Évieux. Bul. Soc. Chim. (4), 3, 1019-1030, (1908).
Chaleur de neutralisation de l'acide picrique par diverses bases aromatiques en milieu benzénique. [Part is same as 1804.]
- 1803.** L. Vignon, E. Évieux. Compt. Rend. 146, 1316-1318, (1908).
Chaleur de neutralisation de l'acide acétique, etc. [Given in 1801.]
- 1804.** L. Vignon, E. Évieux. Compt. Rend. 147, 67-70, (1908).
Chaleur de neutralisation de l'acide picrique, etc. [Given in 1802.]
- 1805.** E. Villari. Nature. 56, 91, (1897).
Influence of Röntgen rays upon electrical conductivity.
V. Villiger see A. Baeyer.
- 1806.** G. Vinci. Arch. Fisiol. 6, 41-56, (1909).
Contributo alla conoscenza della linfogènesi. I. Sulle proprietà fisico-chimiche della linfa della linforrea sperimentale.
T = 25°.
- E. Voegelen see A. Hantzsch.
- 1807.** B. Völlmer. Ann. Physik. (3), 52, 328-356, (1894).
Die electrische Leitfähigkeit von einigen Salzen in Aethyl- und Methylalkohol. [This is 1808 with additions.]
T = 10°, 18° and 26°. S. U.
- 1808.** B. Völlmer. Dis. Halle. (1892).
Die molekulare elektrische Leitfähigkeit von einigen alkoholischen Lösungen. [Original not examined by me. This title is from an abstract in Zeit. Phys. Chem. 10, 668-669, (1892). See 1807.]
- 1809.** B. Völlmer. Festschr. Halle. (1898).
Das elektrolytische Verhalten einiger Lösungen von essigsäurem Kali in Essigsäure. [Original not examined by me. This title is from an abstract in Zeit. Phys. Chem. 29, 187, (1899).]
T = 20° and 30°.

- 1810. G. L. Voerman.** Rec. Trav. Chim. 23, 265-282, (1904).
Recherches sur quelques anhydrides d'acides bibasiques saturés, en connexion avec la théorie de tension de v. Baeyer. [Probably same as 1812a of which it is an extract.]
T=25°. R. O. κ_{25} aq. = 1.5×10^{-6} ; not sub.
- 1811. G. L. Voerman.** Rec. Trav. Chim. 26, 293-310, (1907).
Sur les acides monocarboniques du thiophène. [Same as 1812 for α -acid, but gives also a table of Λ for β -acid.]
T=25°? R. O. κ aq. less than 2×10^{-6} .
- 1812. G. L. Voerman.** Verslag Akad. Amsterdam, 15, 545-555, (1906-1907). Verslag Akad. Amsterdam, English translation, 9, 514-524, (1906-1907).
Het α - en het β -thiopheenzuur. [Indexed as Holleman, Voerman. Same as 1811 for k.]
- 1812a. G. L. Voerman.** Dis. Groningen. (1904). [Not examined by me. See 1810.]
? *Meas.* G. L. Voerman; see 846.
von see under the letter beginning the next word, as under de.
- 1813. D. Vorländer.** Ann. Chemie. 320, 66-98, (1902). *Meas.* Meusel.
Kohlenstoffdoppelbindung und Carbonyl. [Given in 1245.]
T=25°. R. O. κ aq. = 2.6×10^{-6} .
- 1814. D. Vorländer.** Ber. Deutsch. Chem. Ges. 35, 1683-1698, (1902).
Indoxylbildung aus Phenylglycin-o-carbonsäure. [These measurements were apparently made by Meusel. See 1245 for tables of Λ and k.]
T=25°.
- 1815. D. Vorländer.** Ber. Deutsch. Chem. Ges. 36, 268-281, (1903). *Meas.* E. Mumme.
Die sauren Eigenschaften des Malonsäureesters.
T=25°. κ aq. = 2.8×10^{-6} .
D. Vorländer see R. v. Schilling.
- 1816. D. Vorländer, F. Kalkow.** Ann. Chemie. 309, 356-374, (1899).
Die Formaldehydverbindung des Hydroresorcins. [Qualitative.]
- 1817. D. Vorländer, E. Mumme.** Ber. Deutsch. Chem. Ges. 33, 3182-3183, (1900).
Ueber Anildiessig-o-carbonsäure. [Qualitative. For tables of Λ and k see 1245. Same as 1301.]

W.

- 1818. P. Waentig.** Zeit. Phys. Chem. 68, 513-571, (1909). *Meas.* Hermdorf.
Ueber den Zustand des gelösten Jods.
T=20°.
P. Waentig see E. Beckmann.
- 1819. J. Wagner.** Zeit. Phys. Chem. 12, 314-321, (1893).
Ueber die Farbe der Ionen. [Qualitative.]
- 1820. A. J. Wakeman.** Zeit. Phys. Chem. 11, 49-74, (1893).
Das Verhalten einiger Elektrolyte in nichthomogenem Lösungsmittel.
- 1821. A. J. Wakeman.** Zeit. Phys. Chem. 15, 159-182, (1894).
Ueber die Beeinflussung der Molekular-Leitfähigkeit der Essigsäure durch kleine Mengen anderer elektrolytischer Substanzen. Anwendung der Theorie der isohydrischen Lösungen. [Same as 1822.]
- 1822. A. J. Wakeman.** Dis. Leipzig. (1894).
Ueber die Beeinflussung, etc. [Same as 1821.]
Meas. A. Wakeman; see 1904.

- 1823. P. Walden.** Ber. Deutsch. Chem. Ges. 24, 2025-2039, (1891).
Zur Kenntniss der Tetrinsäure, Oxytetrinsäure und ihrer Homologen. [Given in 1831.]
T=25°.
- 1824. P. Walden.** Ber. Deutsch. Chem. Ges. 29, 1692-1707, (1896).
Zur Charakteristik optisch-isomerer Verbindungen.
- 1825. P. Walden.** Ber. Deutsch. Chem. Ges. 31, 3167-3174, (1898).
Ueber die vermeintliche Identität des Tannins mit der α -Digallussäure.
T=25°.
- 1826. P. Walden.** Ber. Deutsch. Chem. Ges. 32, 2862-2871, (1899).
Ueber ein neues, anorganisches, ionisirendes Lösungsmittel. [Given more accurately in 1855.]
T=0°.
- 1827. P. Walden.** Ber. Deutsch. Chem. Ges. 34, 4185-4202, (1901).
Ueber die basischen Eigenschaften des Sauerstoffes.
T=0° and 25°. κ aq. = 3.45×10^{-4} .
- 1828. P. Walden.** Ber. Deutsch. Chem. Ges. 35, 1764-1772, (1902).
Ueber den mehrwerthigen Sauerstoff.
T=0° and 25°. R. O.
- 1829. P. Walden.** Ber. Deutsch. Chem. Ges. 35, 2018-2031, (1902).
Ueber die basischen Eigenschaften des Kohlenstoffs.
T=0°. R. O.
- 1830. P. Walden.** Ber. Deutsch. Chem. Ges. 38, 345-409, (1905).
Ueber das Drehungsvermögen optisch-activer Körper.
T=25°. R. O.
- 1831. P. Walden.** Jour. Russ. Phys.-chem. Soc. 23, 632-652, (1891).
The question of the structure of Demarçay's acids. [Same as 1823 with a few additions.]
- 1832. P. Walden.** Zeit. Anorg. Chem. 23, 373-377, (1900). # *Meas.* [J.]
v. Zawidzki.
Ueber einige zusammengesetzte Rhodan- und Cyanverbindungen.
T=25°.
- 1833. P. Walden.** Zeit. Anorg. Chem. 25, 209-226, (1900).
Ueber einige anorganische Lösungs- und Ionisierungsmittel.
T=25° and 0°.
- 1834. P. Walden.** Zeit. Anorg. Chem. 29, 371-395, (1902).
Ueber anorganische Lösungs- und Ionisierungsmittel.
T=25° and 33°. [Probably R. O.]
- 1835. (P. Walden.)** Zeit. Elektrochem. 14, 713-724, (1908).
Ueber die Schmelzwärme, spezifische Kohäsion und Molekulargrösse bei der Schmelztemperatur.)
- 1836. P. Walden.** Zeit. Phys. Chem. 1, 529-549, (1887).
Ueber die Bestimmung der Molekulargrössen von Salzen aus der elektrischen Leitfähigkeit ihrer wässerigen Lösungen.
T=25°. Hg. U.
- 1837. P. Walden.** Zeit. Phys. Chem. 2, 49-77, (1888).
Ueber die Bestimmung der Molekulargrössen von Salzen aus der elektrischen Leitfähigkeit ihrer wässerigen Lösungen.
T=25°.
- 1838. P. Walden.** Zeit. Phys. Chem. 8, 433-503, (1891). [# *Meas.* U. *Collan.* See 826.]
Ueber die Affinitätsgrössen organischer Säuren und ihre Beziehungen zur Konstitution derselben.
T=25°. S. U. aq. very well purified.

- 1839. P. Walden.** Zeit. Phys. Chem. 10, 563-579, (1892).
 Ueber die Affinitätsgrößen organischer Säuren und ihre Beziehungen zur Konstitution derselben. II. Teil; Trikarbonsäuren. [Continuation of 1838.]
- 1840. P. Walden.** Zeit. Phys. Chem. 10, 638-664, (1892).
 Ueber die Affinitätsgrößen organischer Säuren und ihre Beziehungen zur Konstitution derselben. III. Teil; Monokarbonsäuren. [Continuation of 1839.]
- 1841. P. Walden.** Zeit. Phys. Chem. 15, 196-208, (1894).
 Ueber die optische Drehung der Ionen.
 $T = 25^{\circ}$.
- 1842. P. Walden.** Zeit. Phys. Chem. 43, 385-464, (1903).
 Ueber abnorme Elektrolyte.
 $T = -10^{\circ}, 0^{\circ}$ and 25° . R. O.
- 1843. P. Walden.** Zeit. Phys. Chem. 46, 103-188, (1903). *# Meas. Centnerszwer.*
 Ueber organische Lösungs- und Ionisierungsmittel. I.
 $T = 0^{\circ}$ and 25° . R. O.
- 1844. P. Walden.** Zeit. Phys. Chem. 54, 129-230, (1906).
 Ueber organische Lösungs- und Ionisierungsmittel. II. Teil. Messungen der elektrischen Leitfähigkeit.
 $T = 0^{\circ}$ to 25° . R. O.
- 1845. P. Walden.** Zeit. Phys. Chem. 55, 207-249, (1906).
 Ueber organische Lösungs- und Ionisierungsmittel. III. Teil. Innere Reibung und deren Zusammenhang mit dem Leitvermögen.
 $T = 0^{\circ}$ and 25° . R. O.
- 1846. P. Walden.** Zeit. Phys. Chem. 55, 281-302, (1906).
 Ueber organische Lösungs- und Ionisierungsmittel. IV. Teil. Ebullioskopische Messungen.
 $T = 25^{\circ}$ and 130° .
- 1847. P. Walden.** Zeit. Phys. Chem. 55, 683-720, (1906).
 Ueber organische Lösungs- und Ionisierungsmittel. V. Teil. Lösungsvermögen.
 $T = 0^{\circ}$ and 25° .
- 1848. P. Walden.** Zeit. Phys. Chem. 58, 479-511, (1907).
 Ueber organische Lösungs- und Ionisierungsmittel. VI. Teil. Lösungswärmen.
 $T = 0^{\circ}$ and 25° . R. O. α solvent sub.
- 1849. P. Walden.** Zeit. Phys. Chem. 59, 192-211, (1907).
 Ueber organische Lösungs- und Ionisierungsmittel. VII. Teil. Lösungs- und Dissociationswärmen.
 $T = 0^{\circ}$ and 25° .
- 1850. (P. Walden.)** Zeit. Phys. Chem. 59, 385-415, (1907).
 Ueber organische Lösungs- und Ionisierungsmittel. VIII. Teil. Lichtbrechungsvermögen und elektrolytische Dissociation.) [Quoted.]
- 1851. P. Walden.** Zeit. Phys. Chem. 60, 87-100, (1907).
 Ueber organische Lösungs- und Ionisierungsmittel. IX. Teil. Elektrostriktion.
 $T = 25^{\circ}$.
- 1852. (P. Walden.)** Zeit. Phys. Chem. 61, 633-639, (1907-1908).
 Ueber organische Lösungs- und Ionisierungsmittel. X. Teil. Lösende Kraft und Dielektrizitätskonstante.)
- 1853. (P. Walden.)** Zeit. Phys. Chem. 65, 129-225, (1908-1909).
 Ausdehnungsmodulus, spezifische Kohäsion, Oberflächenspannung und Molekulargröße der Lösungsmittel.)
- 1853a. P. Walden.** Zeit. Phys. Chem. 73, 257-268, (1910).
 Ueber die elektrolytische Leitfähigkeit nichtwässriger Lösungen bei tiefen Temperaturen.
 $T = -112^{\circ}$ to $+103^{\circ}$. R. O. α solvent sub.

- 1853b.** P. Walden, (R. Swinne). *Zeit. Phys. Chem.* 75, 555–577, (1910–1911).
 Ueber einige abnorme Temperaturkoeffizienten der molekularen Oberflächenenergie $\frac{d(\gamma V^{2/3})}{dt}$ von organischen Stoffen.
 T = 25°. R. O.
Meas. P. Walden; see 62, 67, 189, 190, 191, 195, 196, 197, 198, 1264, 1371, 1377.
 P. Walden see C. A. Bischoff.
- 1853c.** P. Walden. *Trans. Faraday Soc.* 6, 71–78, (1910).
 Is water an electrolyte?
 T = 0° and 25°. R. O. α of solvent is sub.
- 1854.** P. Walden, M. Centnerszwer. *Zeit. Anorg. Chem.* 30, 145–250, (1902).
 Flüssiges Schwefeldioxyd als Lösungsmittel. [Same as 1855 and 1856a. More accurate than 1826.]
 T = –74° to +175°. S. U.
- 1855.** P. Walden, M. Centnerszwer. *Zeit. Phys. Chem.* 39, 513–596, (1902).
 Flüssiges Schwefeldioxyd als Lösungsmittel. [Same as 1854 and 1856a.]
 T = –75° to +175°. S. U.
- 1856.** (P. Walden, M. Centnerszwer. *Zeit. Phys. Chem.* 42, 432–468, (1902–1903).
 Ueber Verbindungen des Schwefeldioxyds mit Salzen.)
 A. P. Walker see J. Walker.
- 1857.** J. Walker. *Ber. Deutsch. Chem. Ges.* 34, 4115–4118, (1901).
 Ueber Sauerstoffbasen. [Qualitative.]
- 1858.** J. Walker. *Chem. News.* 94, 138–139, (1906). *Meas.* D. C. Crichton.
 A method for determining velocities of saponification. [Same as 1879.]
- 1859.** J. Walker. *Jour. Chem. Soc.* 61, 696–717, (1892).
 The dissociation constants of organic acids.
 T = 25°. α aq. compared favorably to specially prepared aq.; sub.
- 1860.** J. Walker. *Jour. Chem. Soc.* 61, 1088–1096, (1892).
 The methyl salts of camphoric acid. [Gives 1873 correctly.]
 T = 25°. α aq. sub.
- 1861.** J. Walker. *Jour. Chem. Soc.* 63, 495–510, (1893).
 The electrolysis of sodium ortho-ethyl camphorate. [See 1862 for correction of part of this.]
 T = 25°.
- 1862.** J. Walker. *Jour. Chem. Soc.* 67, 347–348, (1895).
 “Camphothetic” acid; a correction. [See 1861.]
- 1863.** (J. Walker. *Jour. Chem. Soc.* 83, 182–184, (1903).
 The state of carbon dioxide in aqueous solution.)
- 1864.** J. Walker. *Zeit. Phys. Chem.* 4, 319–343, (1889).
 Zur Affinitätsbestimmung organischer Basen.
 T = 25°.
- 1865.** J. Walker. *Zeit. Phys. Chem.* 32, 137–141, (1900).
 Ueber die Beziehung zwischen den Dissoziationskonstanten schwacher Säuren und der Hydrolyse ihrer Alkalisalze. [Measurements same as 1863.]
- 1866.** J. Walker. *Zeit. Phys. Chem.* 46, 30–36, (1903).
 The determination of avidity by the polarimetric method.
- 1867.** (J. Walker. *Zeit. Phys. Chem.* 49, 82–94, (1904).
 Theorie der amphoterer Elektrolyte.) [Same as 1876. Quoted.]

1868. J. Walker. Zeit. Phys. Chem. 51, 706-716, (1905). *Meas. J. Johnston.*
- Theorie der amphoterer Elektrolyte. [Same as 1877.]
1869. (J. Walker. Zeit. Phys. Chem. 56, 575-576, (1906).
Bemerkung zur Theorie der amphoterer Elektrolyte.) [Theoretical.]
1870. (J. Walker. Zeit. Phys. Chem. 57, 600-610, (1906).
Die Affinitätskonstanten amphoterer Elektrolyte. III. Methylirte Aminosäuren.) [Theoretical. A summary of 415 and 890. Same as 1878.]
1871. (J. Walker. Proc. R. Soc. Edinburgh. 20, 255-263, (1892-1895).
Hydrolysis in some aqueous salt solutions.) [Quoted.]
1872. (J. Walker. Proc. Chem. Soc. 8, 137, (1892).
The dissociation constants of organic acids.) [No data.]
1873. J. Walker. Proc. Chem. Soc. 8, 156, (1892).
The methylic salts of camphoric acid. [Evidently intended to be same as 1860, but the names of the compounds are interchanged and $k \times 10^4$ for one is given as 9.75 instead of the correct value 7.95.]
1874. J. Walker. Proc. Chem. Soc. 10, 94-95, (1894).
Note on the constitution of glycocine. [Qualitative.]
1875. (J. Walker. Proc. Chem. Soc. 18, 246, (1902).
State of carbon dioxide in aqueous solution.)
1876. (J. Walker. Proc. R. Soc. London. 73, 155-165, (1904).
Theory of amphoteric electrolytes.) [Same as 1867.]
1877. J. Walker. Proc. R. Soc. London. 74, 271-280, (1904-1905). *Meas. J. Johnston.*
- Theory of amphoteric electrolytes. [Same as 1868.]
1878. (J. Walker. Proc. R. Soc. London. A, 78, 140-149, (1906).
The affinity constants of amphoteric electrolytes. III. Methylated aminoacids.) [Same as 1870.]
1879. J. Walker. Proc. R. Soc. London. A, 78, 157-160, (1906). *Meas. D. C. Crichton.*
- A method for determining velocities of saponification. [Same as 1858.]
Meas. J. Walker; see 44, 231, 232, 397, 398, 965, 1050, 1410, 1411, 1412, 1414.
J. Walker see A. C. Brown.
1880. J. Walker, E. Aston. Jour. Chem. Soc. 67, 576-586, (1895).
Affinity of weak bases.
T = 60°.
1881. (J. Walker, E. Aston. Proc. Chem. Soc. 11, 112, (1895).
Affinity of weak bases.) [No data. A summary of 1880.]
1882. J. Walker, H. H. Beveridge. Jour. Chem. Soc. 91, 1797-1802, (1907).
para-Toluidine monohydrate.
1883. J. Walker, W. Cormack. Jour. Chem. Soc. 77, 5-21, (1900).
The dissociation constants of very weak acids. [Same measurements in 1865.]
T = 18°. S. U. κ_{18} aq. less than 0.65×10^{-6} .
1884. J. Walker, F. J. Hambly. Jour. Chem. Soc. 71, 61-72, (1897).
Electrical conductivity of diethylammonium chloride in aqueous alcohol.
T = 25°. S. U. κ_{25} aq. = 1.5×10^{-6} ; sub.
1885. (J. Walker, F. J. Hambly. Proc. Chem. Soc. 12, 246, (1896).
Electrical conductivity of diethylammonium chloride in aqueous alcohol.) [No data.]
1886. J. Walker, S. A. Kay. Jour. Chem. Soc. 71, 489-508, (1897).
Velocity of urea formation in aqueous alcohol.
T = 32°.

1887. J. Walker, A. J. Robertson. *Proc. R. Soc. Edinburgh*, 24, 363-379, (1901-1903).
Freezing-point depression in electrolytic solutions.
T = 0°. S. U.
1888. J. Walker, A. P. Walker. *Jour. Chem. Soc.* 87, 961-967, (1905).
Tetraphylsuccinic acid.
T = 25°.
1889. J. Walker, J. K. Wood. *Jour. Chem. Soc.* 77, 383-390, (1900).
Configuration of the camphoric acids. [Same as 1891 for k, but also gives μ .]
T = 25°.
1890. J. Walker, J. K. Wood. *Jour. Chem. Soc.* 83, 484-491, (1903).
Hydrolysis of urea hydrochloride. [Same as 1892 for k.]
T = 25°.
1891. J. Walker, J. K. Wood. *Proc. Chem. Soc.* 16, 59-60, (1900).
The configuration of the camphoric acids. [k same as 1889.]
1892. J. Walker, J. K. Wood. *Proc. Chem. Soc.* 19, 67, (1903).
Hydrolysis of urea hydrochloride. [Same as 1890 for k.]
1893. J. W. Walker. *Jour. Chem. Soc.* 85, 1082-1098, (1904).
Ionisation and chemical combination.
T = 18°. R. O.
1894. J. W. Walker, F. M. G. Johnson. *Jour. Chem. Soc.* 87, 1597-1600, (1905).
The electrical conductivities of some salt solutions in acetamide.
T = 100°.
1895. (J. W. Walker, F. M. G. Johnson. *Proc. Trans. R. Soc. Canada* (2), 11, Sect. III, 29-30, (1905).
The electrical conductivity of salt solutions in acetamide.) [No data.]
1896. (J. W. Walker, F. M. G. Johnson. *Proc. Chem. Soc.* 21, 233, (1905).
The electrical conductivities of some salt solutions in acetamide.) [No data.]
1897. J. W. Walker, D. McIntosh, E. H. Archibald. *Jour. Chem. Soc.* 85, 1098-1105, (1904).
Ionisation and chemical combination in the liquefied halogen hydrides and hydrogen sulphide. [Qualitative.]
T = -50°, -80° and -100°.
1898. (J. W. Walker, D. McIntosh, E. H. Archibald. *Proc. Chem. Soc.* 20, 134, (1904).
Ionisation and chemical combination in the liquefied halogen hydrides and hydrogen sulphide.) [No data.]
1899. O. Wallach. *Ann. Chemie.* 269, 326-347, (1892). *Meas. A. Binz.*
Zur Kenntniss der Terpene und der ätherischen Oele.
T = 18°. S. U.
1900. E. Warburg. *Ann. Physik.* (3), 54, 396-433, (1895).
Ueber electrische Leitung und Convection in schwach leitenden verdünnten Lösungen.
T = 16° to 18°.
F. J. Warth see R. C. Farmer.
1901. (E. W. Washburn. *Jour. Am. Chem. Soc.* 31, 322-355, (1909).
The hydration of ions determined by transference experiments in the presence of a non-electrolyte.) [Inorganic and theoretical. Same as 1902.]
1902. (E. W. Washburn. *Zeit. Phys. Chem.* 66, 513-554, (1909).
Bestimmung der Hydratation von Ionen durch Ueberführungsversuche in Gegenwart eines Nichteletkrolyten.) [Same as 1901.]
Meas. O. Weber; see 78.
O. Weber see E. Rimbach.

1903. E. Wedekind. Ber. Deutsch. Chem. Ges. 32, 3561-3569, (1899).
Zur Charakteristik stereoisomerer Ammoniumsalze.
T = 25°.
- 1903a. E. Wedekind, F. Paschke. Zeit. Phys. Chem. 73, 118-128, (1910).
Zur Kinetik des Zerfalls quartärer Ammoniumsalze in Chloroform.
T = 25°. κ aq. = 3×10^{-6} .
1904. J. B. Weems. Am. Chem. Jour. 16, 569-588, (1894). # *Meas. A. Wakeman*.
On electrosyntheses by the direct union of anions of weak organic acids. [Qualitative.]
1905. (H. Wegelius. Zeit. Elektrochem. 14, 514-518, (1908).
Ueber den Einfluss der Konzentration auf die Optimumtemperatur der elektrischen Leitfähigkeit der schwachen Elektrolyte mit negativer Dissoziationswärme.) [Inorganic.]
1906. R. Wegscheider. Ber. Deutsch. Chem. Ges. 36, 1541-1544, (1903).
Meas. H. Süss.
Ueber die Tautomerie der o-Aldehydsäuren.
1907. R. Wegscheider. Monatsh. 16, 75-152, (1895). *Meas. W. Meyerhoffer*.
Untersuchungen über die Hemipinsäure und die Esterbildung. [Same as 1921.]
[T probably 25°.] S. U. κ aq. = 7×10^{-6} .
1908. R. Wegscheider. Monatsh. 23, 287-316, (1902).
Ueber den Einfluss der Constitution auf die Affinitätskonstanten organischer Säuren. [Calculated from Lichty; see 1099. Same as 1922.]
1909. R. Wegscheider. Monatsh. 23, 317-356, (1902).
Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. IV. Abhandlung; Ueber die Leitfähigkeit einiger Säuren und Estersäuren. [Same as 1923.]
T = 25° ± 0.05°. R. O. κ aq. = $0.6 - 1.3 \times 10^{-6}$; [not sub.? On page 325 it is stated that aq. is sub. for one compound.]
1910. (R. Wegscheider. Monatsh. 23, 357-368, (1902).
Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. V. Abhandlung; Ueber die Constitution einiger Estersäuren.) [Same as 1924. Quoted.]
1911. (R. Wegscheider. Monatsh. 23, 599-668, (1902).
Ueber die stufenweise Dissociation zweibasischer Säuren.) [Same as 1925. Values of second k_A are calculated.]
1912. R. Wegscheider. Monatsh. 26, 1231-1234, (1905). *Meas. P. Lux*.
Ueber die Konstitution der o-Aldehydsäuren in wässriger Lösung. [Same as 1926.]
1913. R. Wegscheider. Monatsh. 26, 1235-1239, (1905). *Meas. P. Lux*.
Ueber die stufenweise Dissoziation zweibasischer Säuren. [Same as 1927.]
1914. R. Wegscheider. Monatsh. 26, 1265-1276, (1905). *Meas. P. Lux and J. H. Süss*.
Ueber die Affinitätskonstanten der Aminosäuren. [Same as 1928.]
1915. R. Wegscheider. Monatsh. 28, 819-824, (1907). *Meas. N. L. Müller*.
Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. XVII. Abhandlung; Ueber Aminoterephthalestersäuren. [Same as 1929.]
1916. R. Wegscheider. Zeit. Elektrochem. 14, 510-512, (1908). *Meas. A. Schugowitsch*.
Ueber den Farbumschlag des Phenolphthaleins.
T = 22° to 24°.

1917. R. Wegscheider. *Zeit. Elektrochem.* 14, 740-741, (1908).
Die Ionisationskonstanten des zweiten Wasserstoffions zweibasischer Säuren. [Corrects 370.]
1918. (R. Wegscheider. *Zeit. Phys. Chem.* 69, 603-629, (1909).
Ueber die Anomalie der starken Elektrolyte und die Gültigkeitsgrenzen des Verdünnungsgesetzes.) [Quoted.]
1919. (R. Wegscheider. *Verhand. Deutsch. Phys. Ges.* 11, 544-545, (1909).
Gültigkeitsgrenzen des Ostwaldschen Verdünnungsgesetzes.) [Qualitative. See 1918.]
1920. (R. Wegscheider. *Sitzber. Akad. Wien.* 104, 2b, 111-116, (1895).
Ueber die Affinitätskonstanten der mehrbasischen Säuren und der Estersäuren.) [Quoted.]
1921. R. Wegscheider. *Sitzber. Akad. Wien.* 104, 2b, 117-194, (1895).
Meas. W. Meyerhoffer.
Untersuchungen über die Hemipinsäure und die Esterbildung. [Same as 1907.]
1922. R. Wegscheider. *Sitzber. Akad. Wien.* 111, 2b, 67-96, (1902).
Ueber den Einfluss der Constitution auf die Affinitätskonstanten organischer Säuren. [Same as 1908.]
1923. R. Wegscheider. *Sitzber. Akad. Wien.* 111, 2b, 97-136, (1902).
Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. IV. Abhandlung; Ueber die Leitfähigkeit einiger Säuren und Estersäuren. [Same as 1909.]
1924. (R. Wegscheider. *Sitzber. Akad. Wien.* 111, 2b, 154-165, (1902).
Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. V. Abhandlung; Ueber die Constitution einiger Estersäuren.) [Same as 1910.]
1925. (R. Wegscheider. *Sitzber. Akad. Wien.* 111, 2b, 441-510, (1902).
Ueber die stufenweise Dissociation zweibasischer Säuren.) [Same as 1911.]
1926. R. Wegscheider. *Sitzber. Akad. Wien.* 114, 2b, 765-768, (1905).
Meas. P. Lux.
Ueber die Konstitution der o-Aldehydsäuren in wässriger Lösung. [Same as 1912.]
1927. R. Wegscheider. *Sitzber. Akad. Wien.* 114, 2b, 769-773, (1905).
Meas. P. Lux.
Ueber die stufenweise Dissoziation zweibasischer Säuren. [Same as 1913.]
1928. R. Wegscheider. *Sitzber. Akad. Wien.* 114, 2b, 801-812, (1905).
Meas. P. Lux and J. H. Süss.
Ueber die Affinitätskonstanten der Aminosäuren. [Same as 1914.]
1929. R. Wegscheider. *Sitzber. Akad. Wien.* 116, 2b, 721-726, (1907).
Meas. N. L. Müller.
Untersuchungen über die Veresterung, etc. [Same as 1915.]
Meas. R. Wegscheider; see 1930, 1931, 1933, 1939, 1941, 1942.
1930. R. Wegscheider, K. Bittner. *Monatsh.* 21, 638-654, (1900). *Meas. R. Wegscheider.*
Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. II. Abhandlung; Ueber die Veresterung der Brom- und der Oxyterephthalsäure. [Same as 1931.]
1931. R. Wegscheider, K. Bittner. *Sitzber. Akad. Wien.* 109, 2b, 523-539, (1900). *Meas. R. Wegscheider.*
Untersuchungen über die Veresterung, etc. [Same as 1930.]

1932. R. Wegscheider, E. Bondi. Monatsh. 26, 1039-1068, (1905). *Meas. P. Lux.*
 Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. XIII. Abhandlung; Ueber Estersäuren 4-substituierter Phthalsäuren. [Same as 1933.]
1933. R. Wegscheider, E. Bondi. Sitzber. Akad. Wien. 114, 2b, 573-602, (1905). *Meas. P. Lux.*
 Untersuchungen über die Veresterung, etc. [Same as 1932.]
1934. R. Wegscheider, A. Glogau. Monatsh. 24, 915-958, (1903). *Meas. H. Süss.*
 Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. XII. Abhandlung; Ueber die Veresterung der Phthalonsäure und der Homophthalsäure. [Qualitative. Same as 1935. Measurements given in 1684.]
1935. R. Wegscheider, A. Glogau. Sitzber. Akad. Wien. 112, 2b, 749-792, (1903). *Meas. H. Süss.*
 Untersuchungen über die Veresterung, etc. [Same as 1934.]
1936. R. Wegscheider, J. Hecht. Monatsh. 24, 413-433, (1903).
 Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. X. Abhandlung; Ueber Phenylbernsteinsäure und ihre Veresterung. [Same as 1937.]
- R. O. $\kappa_{aq.} = 2.1 \times 10^{-6}$.
1937. R. Wegscheider, J. Hecht. Sitzber. Akad. Wien. 112, 2b, 241-261, (1903).
 Untersuchungen über die Veresterung, etc. [Same as 1936.]
1938. R. Wegscheider, A. Lipschitz. Monatsh. 21, 787-812, (1900). *Meas. R. Wegscheider.*
 Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. III. Abhandlung; Ueber die Veresterung der 3- und 4-Nitrophthalsäure. [Same as 1939. Corrected in 1909.]
1939. R. Wegscheider, A. Lipschitz. Sitzber. Akad. Wien. 109, 2b, 586-611, (1900). *Meas. R. Wegscheider.*
 Untersuchungen über die Veresterung, etc. [Same as 1938.]
1940. R. Wegscheider, P. Lux. Monatsh. 30, 411-445, (1909). *Meas. P. Lux.*
 Die Sulfonsäuren und das Ostwald'sche Verdünnungsgesetz. [Same as 1940a.]
- $T = 25^\circ \pm 0.05^\circ$. R. O. $\kappa_{aq.} = 1 - 1.8 \times 10^{-6}$; sub. in some cases.
- 1940a. R. Wegscheider, P. Lux. Sitzber. Akad. Wien. 118, 2b, 189-223, (1909). *Meas. P. Lux.*
 Die Sulfonsäuren, etc. [Same as 1940.]
1941. R. Wegscheider, P. v. Rušnov. Monatsh. 24, 375-390, (1903). *Meas. R. Wegscheider.*
 Untersuchungen über die Veresterung unsymmetrischer zwei- und mehrbasischer Säuren. XI. Abhandlung; Verhalten der Hemipinestersäuren gegen Hydrazinhydrat und gegen Thionylchlorid. [Same as 1942.]
- R. O.
1942. R. Wegscheider, P. v. Rušnov. Sitzber. Akad. Wien. 112, 2b, 207-222, (1903). *Meas. R. Wegscheider.*
 Untersuchungen über die Veresterung, etc. [Same as 1941.]
- M. Weinheber see A. Rosenheim.
 J. Weir see H. Pauly.
 H. G. Wells see R. L. Benson.

1943. (R. C. Wells. Jour. Am. Chem. Soc. 31, 1027-1035, (1909).
The electrical conductivity of ferric sulphate solutions.) [Inorganic and quoted.]
Wendt see Böhlm-Wendt.
H. A. Wentworth see H. M. Goodwin.
F. Wenzel see F. Haiser.
1944. A. Werner. Ann. Chemie. 322, 296-351, (1902).
Ueber die Constitution der Oxoniumsalze.
1945. (A. Werner. Zeit. Anorg. Chem. 15, 1-41, (1897).
Beitrag zur Konstitution anorganischer Verbindungen. VII. Mitteilung.
Ueber die Molekulargröße anorganischer Salze.) [Inorganic.]
A. Werner. Zeit. Anorg. Chem. 15, 123-142, (1897), see under Fassbender.
1946. A. Werner. Zeit. Anorg. Chem. 21, 201-242, (1899). *Meas. W. Spruck.*
Beitrag zur Konstitution anorganischer Verbindungen. XVIII. Mitteilung.
Ueber Aethyldiamin- und Propyldiaminverbindungen von Salzen zweiwertiger Metalle. [Same as 1644.]
1947. A. Werner. Zeit. Anorg. Chem. 22, 91-157, (1900). *# Meas. R. Klien.*
Beitrag zur Konstitution anorganischer Verbindungen. XV. Mitteilung.
Ueber rhodanatokobaltische und strukturisomere Salze.
1948. A. Werner, C. Herty. Zeit. Phys. Chem. 38, 331-352, (1901).
Beiträge zur Konstitution anorganischer Verbindungen.
T = 25°.
1949. A. Werner, E. Humphrey. Ber. Deutsch. Chem. Ges. 34, 1719-1732, (1901).
Ueber stereoisomere Dinitritdiaethyldiaminkobaltsalze. [Same as 863.]
1950. (A. Werner, A. Miolati. Zeit. Phys. Chem. 12, 35-55, (1893).
Beiträge zur Konstitution anorganischer Verbindungen.)
1951. (A. Werner, A. Miolati. Zeit. Phys. Chem. 14, 506-521, (1894).
Beiträge zur Konstitution anorganischer Verbindungen.)
1952. A. Wesch. Dis. Freiburg. (1908).
Ueber Chromsäurederivate. [Same as 1487.]
T = 18°. R. O. κ aq. = 5.8×10^{-6} .
Meas. A. Wesch; see 1487.
1953. A. P. West. Dis. Johns Hopkins. (1905).
A study of the effect of temperature on dissociation and on the temperature coefficients of conductivity in aqueous solutions. [Same as 924.]
A. P. West see H. C. Jones.
- 1953a. A. P. West, H. C. Jones. Am. Chem. Jour. 44, 508-544, (1910).
The conductivity, dissociation and temperature coefficients of conductivity at 35°, 50° and 65° of aqueous solutions of a number of salts.
T = 35°, 50°, 65°. S. U.
1954. C. A. West. Jour. Chem. Soc. 77, 705-707, (1900).
The dissociation constant of azoimide (hydrazoic acid).
T = 25°. S. U. κ aq. = 5.85×10^{-6} ; sub.
Meas. Westhauser; see 1032.
E. Wheeler see H. E. Armstrong.
P. Wheeler see G. N. Lewis.
1955. (W. C. D. Whetham. Chem. News. 98, 98-100, (1908).
The electrolytic properties of dilute solutions of sulphuric acid.) [Given in 1967.]

- 1956.** W. C. D. Whetham. *Phil. Mag.* (5), 38, 392-396, (1894).
On the velocities of ions and the relative ionization-power of solvents.
- 1957.** W. C. D. Whetham. *Phil. Mag.* (5), 44, 1-9, (1897).
The ionizing power of solvents.
T = 18° and 60°. C. G. S. units.
- 1958.** (W. C. D. Whetham. *Phil. Mag.* (6), 5, 279-290, (1903).
The theory of electrolytic dissociation.)
- 1959.** W. C. D. Whetham. *Zeit. Phys. Chem.* 33, 344-352, (1900).
Die Dissociation verdünnter Lösungen beim Gefrierpunkte. [Same as **1960**.
Given in **1963**.]
T = 0°. C. G. S. units. κ aq. sub.
- 1960.** W. C. D. Whetham. *Proc. R. Soc. London.* 66, 192-203, (1899-1900).
The ionisation of dilute solutions at the freezing-point. [Same as **1959**. Given
in **1963**.]
- 1961.** (W. C. D. Whetham. *Proc. R. Soc. London.* 71, 332-338, (1902-1903).
The electrical conductivity of solutions at the freezing-point of water.) [In-
organic.]
- 1962.** W. C. D. Whetham. *Trans. R. Soc. London. A*, 186, 507-522, (1895).
On the velocities of ions.
T = 16° to 18°. C. G. S. units.
- 1963.** W. C. D. Whetham. *Trans. R. Soc. London. A*, 194, 321-360, (1900).
The ionization of dilute solutions at the freezing point. [Same as **1959** and
1960 with one additional table of Λ of $K_4Fe(CN)_6$.]
T = 0°. C. G. S. units. κ_{18} aq. about 0.9×10^{-4} ; sub. except in one table.
- 1964.** (W. C. D. Whetham, H. H. Paine. *Chem. News.* 98, 118-120, (1908).
The electrolytic properties of dilute solutions of sulphuric acid.) [Inorganic.
Given in **1967**.]
- 1965.** (W. C. D. Whetham, H. H. Paine. *Chem. News.* 98, 127-130, (1908).
The electrolytic properties of dilute solutions of sulphuric acid.) [Inorganic.
Given in **1967**.]
- 1966.** (W. C. D. Whetham, H. H. Paine. *Chem. News.* 98, 158-159, (1908).
The electrolytic properties of dilute solutions of sulphuric acid.) [Inorganic.
Given in **1967**.]
- 1967.** (W. C. D. Whetham, H. H. Paine. *Proc. R. Soc. London. A*, 81,
58-80, (1908-1909).
The electrolytic properties of dilute solutions of sulphuric acid.) [Inorganic.
Same as **1955**, **1964**, **1965** and **1966** together.]
W. H. Whitcomb see A. A. Noyes.
- 1968.** G. F. White, H. C. Jones. *Am. Chem. Jour.* 42, 520-541, (1909).
The effect of temperature and dilution on the conductivity of organic acids
in aqueous solution.
T = 0° to 35°. S. U. κ_{25} aq. = $1.2-1.7 \times 10^{-4}$.
- 1968a.** G. F. White, H. C. Jones. *Am. Chem. Jour.* 44, 159-199, (1910).
The conductivity and dissociation of organic acids in aqueous solution at
different temperatures.
T = 0° to 35°. S. U.
J. White see E. J. Constam.
R. Whympier see R. J. Caldwell.
- 1969.** G. Wicke. *Dis. Erlangen.* (1898).
Beitrag zur Kenntnis des Pulegons und Menthons.
Hg. U.
Meas. P. Wiegner; see 738.
Meas. J. Wigger; see 820.
A. Wild see L. Pelet-Jolivet.

- 1970. M. Wildermann.** Zeit. Phys. Chem. 14, 231-246, (1894).
Die methode von Kohlrausch in ihrer Anwendung zur Untersuchung der elektrischen Leitfähigkeit schwach dissociierter Stoffe.
T = 18°. S. U.
- 1971. M. Wildermann.** Zeit. Phys. Chem. 14, 247-271, (1894).
Ueber eine weitere Methode zur Bestimmung der elektrischen Leitfähigkeit schwach dissociierter Stoffe.
T = 25° ± 0.05°. κ_{25} aq. = 2.83×10^{-6} .
- 1972. M. Wildermann.** Zeit. Phys. Chem. 15, 337-357, (1894).
Der experimentelle Beweis der van't Hoff'schen Konstante, des Arrhenius'schen Satzes, des Ostwald'schen Verdünnungsgesetzes in sehr verdünnten Lösungen.
- 1973. M. Wildermann.** Zeit. Phys. Chem. 19, 233-250, (1896).
Experimenteller Beweis der van't Hoff'schen Konstante, des Arrhenius'schen Satzes, des Ostwald'schen Verdünnungsgesetzes, des Dalton'schen Gesetzes u. s. w. in sehr verdünnten Lösungen.
- 1973a. E. G. Willcock.** Jour. Physiol. 37, 27-36, (1908).
Crystalline egg-albumin.
R. S. Willows see A. E. Garrett.
- 1974. R. Willstätter.** Ber. Deutsch. Chem. Ges. 28, 3271-3292, (1895).
Meas. V. Rothmund.
Ueber die Aufspaltung der Tropinsäure. [Same as 1977.]
- 1975. R. Willstätter.** Ber. Deutsch. Chem. Ges. 31, 1534-1553, (1898).
Meas. V. Rothmund.
Ueber die Constitution der Spaltungsproducte von Atropin und Cocain.
T = 25°. R. O.
- 1976. R. Willstätter.** Ber. Deutsch. Chem. Ges. 32, 1635-1641, (1899).
Meas. V. Rothmund.
Ueber einige Derivate des Ecgonins.
T = 25°. R. O. κ aq. sub.
- 1977. R. Willstätter.** Habilitatschr. München. (1896). *Meas. V. Rothmund.*
Untersuchungen in der Tropingruppe. [Same as 1974.]
- 1978. R. Willstätter, C. Hollander.** Ann. Chemie. 326, 79-90, (1903).
Meas. V. Rothmund.
Synthese der Ecgoninsäure. [Same as 843.]
T = 25°.
- 1979. R. Willstätter, R. Lessing.** Ber. Deutsch. Chem. Ges. 35, 2065-2073, (1902). *Meas. V. Rothmund, and Drucker.*
Ueber N-Methylpyrrolidin- α_1 - α_2 -dicarbonsäure. [Same as 1074 with corrections.]
T = 25°. R. O.
- 1980. E. Wilson.** Proc. R. Soc. London. 71, 241-243, (1902-1903).
Some dielectric properties of solid glycerine.
T = -81° to +13°.
- 1981. F. P. Wilson.** Dis. Johns Hopkins. (1899). *Meas. B. P. Caldwell.*
I. Orthosulphaminebenzoic acid. II. Orthocarbaminebenzenesulphonic acid.
T = 25°.
- 1982. (J. H. Wilson.** Am. Chem. Jour. 35, 78-84, (1906).
Some concentration cells in methyl and ethyl alcohols.) [Inorganic and quoted.]
- 1983. T. M. Wilson.** Am. Jour. Physiol. 16, 438-467, (1906).
On the comparison of conductivity and freezing points of small quantities of body fluids in health and disease.

- 1984. K. Winkelblech.** Zeit. Phys. Chem. 36, 546-595, (1901).
 Ueber amphotere Elektrolyte und innere Salze. [Same as 1985.]
 $T = 25^\circ$. S. U. κ aq. less than 3×10^{-6} ; sub.
- 1985. K. Winkelblech.** Dis. Leipzig. (1901).
 Ueber amphotere Elektrolyte und innere Salze. [Same as 1984.]
Meas. K. Winkelblech; see 268.
Meas. H. Wislicenus; see 66, 868, 1669, 1671, 1673, 1674.
- 1986. L. Wöhler.** Ber. Deutsch. Chem. Ges. 38, 1351-1359, (1905).
 Die Molekulargrösse der Knallsäure.
 $T = 0^\circ$. R. O. κ aq. $= 1.73 \times 10^{-6}$; not sub.
 P. Wöhler see W. Kerp.
- 1987. J. Woelfer.** Ann. Physik. (3), 57, 91-111, (1896).
 Die Siedepunkterhöhung von einigen aethyl- und methylalkoholischen Salzlösungen. [Part is same as 1988.]
 Hg. U.
- 1988. J. Woelfer.** Dis. Halle. (1894).
 Ueber die Erhöhung des Siedepunktes von absolutem Alkohol durch Lösung einiger Salze. [Given in 1987.]
- 1989. (A. Wörmann.** Ann. Physik. (4), 29, 194-200, (1909).
 Die Temperaturkoeffizienten der elektrischen Leitfähigkeit einiger Säuren und Basen in wässriger Lösung.) [Inorganic. Corrected in 1990.]
 $T = 0^\circ$ to 32° .
- 1990. (A. Wörmann.** Ann. Physik. (4), 29, 623-624, (1909).
 Berichtigung zu der Mitteilung "Die Temperaturkoeffizienten der elektrischen Leitfähigkeit einiger Säuren und Basen in wässriger Lösung.") [Corrects 1989.]
- 1991. A. Wohl.** Ber. Deutsch. Chem. Ges. 40, 2282-2293, (1907).
 Ueber Oxyfumar- und Oxymaleinsäure. [Corrects 926.]
- 1992. A. Wohl, P. Claussner.** Ber. Deutsch. Chem. Ges. 40, 2308-2312, (1907).
 Messungen an der Oxymalein- und Oxyfumarsäure.
 $T = 17^\circ$.
- 1993. H. Wolf.** Zeit. Elektrochem. 8, 117-119, (1902).
 Zur Kenntnis der Leitfähigkeit von Lösungen gemischter Elektrolyte. [Qualitative. Given with complete data in 1994.]
- 1994. H. Wolf.** Zeit. Phys. Chem. 40, 222-255, (1902).
 Beitrag zur Kenntnis der Leitfähigkeiten gemischter Lösungen von Elektrolyten.
 $T = 25^\circ \pm 0.05^\circ$. κ aq. $= 2.0 \times 10^{-6}$.
- 1995. J. K. Wood.** Jour. Chem. Soc. 83, 568-578, (1903).
 The affinities of some feebly basic substances. [Same as 1998.]
 $T = 40.2^\circ$.
- 1996. J. K. Wood.** Jour. Chem. Soc. 89, 1831-1839, (1906).
 The acidic constants of some ureides and uric acid derivatives.
 $T = 25^\circ$. R. O. κ_{15} aq. not over 1.5×10^{-6} .
- 1997. J. K. Wood.** Jour. Chem. Soc. 89, 1839-1847, (1906).
 The affinity constants of xanthine and its methyl derivatives.
 $T = 40.1^\circ$ and 25° .
- 1998. J. K. Wood.** Proc. Chem. Soc. 19, 67-68, (1903).
 The affinities of some feebly basic substances. [Same as 1995.]
- 1999. (J. K. Wood.** Proc. Chem. Soc. 22, 271, (1906).
 The acidic constants of some ureides and uric acid derivatives.) [No data.]

- 2000.** (J. K. Wood. *Proc. Chem. Soc.* 22, 271-272, (1906).
The affinity constants of xanthine and its methyl derivatives.) [No data.]
J. K. Wood see J. Walker.
- 2001.** (R. W. Wood. *Am. Chem. Jour.* 15, 663-670, (1893).
The action of salts on acids.)
- 2002.** R. W. Wood. *Am. Chem. Jour.* 16, 313-325, (1894).
The affinity constants of weak acids and the hydrolysis of salts.
[$T=55^{\circ}$?]
- 2003.** R. W. Wood. *Phil. Mag.* (5), 41, 117-120, (1896).
On the dissociation degree of some electrolytes at 0° . [Same as **2004.**]
 $T=0^{\circ}$ and 25° . S. U. α aq. sub.
- 2004.** R. W. Wood. *Zeit. Phys. Chem.* 18, 521-523, (1895).
Notiz über den Dissoziationsgrad einiger Elektrolyte bei Null Grad. [Same as **2003.**]
 $T=0^{\circ}$ and 25° . S. U. α aq. sub.
- 2005.** T. B. Wood, W. B. Hardy. *Proc. R. Soc. Soc. London. B*, 81, 38-43, (1908-1909).
Electrolytes and colloids. The physical state of gluten.
B. E. Woolley see H. Henstock.
- 2003.** R. G. Wright. *Dis. Basel.* (1902).
Zur Kenntnis des Auramins G.
 $T=0^{\circ}$ and 25° .

Z.

- 2007.** U. Zanninowich Tessarin. *Gas. Chim. Ital.* 26, I, 311-323, (1896).
Dissociazione elettrolitica delle soluzioni in acido formico. [Same as **2003.**]
 $T=25^{\circ}$.
- 2003.** H. Zanninovich-Tessarin. *Zeit. Phys. Chem.* 19, 251-260, (1896).
Elektrolytische Dissociation der Lösungen in Ameisensäure. [Same as **2007.**]
- 2009.** J. v. Zawidzki. *Ber. Deutsch. Chem. Ges.* 36, 3325-3337, (1903).
Ueber den amphoteren Charakter der Kakodylsäure. [Corrected in **2010.**]
 $T=25^{\circ}$ and 0° . S. U. α aq. sub.
- 2010.** J. v. Zawidzki. *Ber. Deutsch. Chem. Ges.* 37, 153-154, (1904).
Ueber den amphoteren Charakter der Kakodylsäure. [A correction of **2009.**]
- 2011.** J. v. Zawidzki. *Ber. Deutsch. Chem. Ges.* 37, 2289-2298, (1904).
Ueber die basischen Eigenschaften der Kakodylsäure und des Harnstoffs.
[See **739.**]
 $T=25^{\circ}$.
- 2012.** (J. v. Zawidzki. *Ber. Deutsch. Chem. Ges.* 37, 2298-2301, (1904).
Zur Theorie der Pseudosäuren.)
- 2013.** J. v. Zawidzki. *Zeit. Phys. Chem.* 42, 612-616, (1902-1903).
Ueber Saponinschaum.
 $T=25^{\circ}$. S. U. α aq. probably sub.
Meas. J. v. Zawidzki; see **1832.**
B. Zdanowski see J. Kowalski.
- 2014.** F. Zecchini. *Gas. Chim. Ital.* 23, II, 601-607, (1893).
Esperienze sul potere rotatorio della coniina e dei suoi sali. [Same as **2015.**]
 $T=25^{\circ}$.
- 2015.** F. Zecchini. *Rend. Accad. Lincei.* (5), 2, II, 168-173, (1893).
Esperienze sul potere rotatorio, etc. [Same as **2014.**]
Zelinskij see Zelinsky.
- 2016.** N. Zelinsky. *Ber. Deutsch. Chem. Ges.* 24, 3997-4005, (1891).
Ueber die stereoisomeren Dimethyladipinsäuren und Dimethylpimelinsäuren.

- 2017. N. Zelinsky.** Ber. Deutsch. Chem. Ges. 29, 616–618, (1896).
Zur Kenntniss der stereoisomeren Dimethyltricarballylsäuren.
- 2018. N. Zelinsky.** Jour. Russ. Phys.-chem. Soc. 23, 612–632, (1891).
Electrolytic conductivity of aqueous solutions of stereoisomeric acids and their mixtures.
T = 25°.
- 2019. (N. D. Zelinsky.** Jour. Russ. Phys.-chem. Soc. 26, 608–611, (1894).)
[No title. A report on the electrolysis of potassium salts of nitro-organic compounds.]
- 2020. (N. D. Zelinsky.** Jour. Russ. Phys.-chem. Soc. 26, 611–612, (1894).)
[No title. A report on the electrolysis of sodium salts of nitromethane.]
Meas. N. Zelinsky; see 1217.
- 2021. N. Zelinsky, A. Besredka.** Ber. Deutsch. Chem. Ges. 24, 459–478, (1891).
Ueber das gegenseitige Verhalten der Dimethylglutar- und Trimethylbernsteinsäuren und über die stereoisomeren Trimethylbernsteinsäuren. [Same as **2022.**]
- 2022. N. Zelinsky, A. Besredka.** Jour. Russ. Phys.-chem. Soc. 23, 126–147, (1891).
Of the mutual relation of isomeric dimethylglutaric and trimethylsuccinic acids and of stereoisomeric trimethylsuccinic acids. [Same as **2021.**]
- 2023. N. Zelinsky, L. Buchstab.** Ber. Deutsch. Chem. Ges. 24, 1876–1880, (1891).
Ueber stereoisomere Phenylmethylbernsteinsäuren.
- 2024. N. Zelinsky, A. Generosow.** Ber. Deutsch. Chem. Ges. 29, 729–733, (1896).
Untersuchungen in der Hexamethylenreihe.
- 2025. N. Zelinsky, W. Isajew.** Ber. Deutsch. Chem. Ges. 29, 819–820, (1896).
Ueber stereoisomere Dimethyldioxyadipinsäuren.
- 2026. N. Zelinsky, N. Izgaryšev.** Jour. Russ. Phys.-chem. Soc. 40, 1379–1388, (1908).
The electrolytic dissociation constants of cycloparaffin acids.
- 2027. (N. Zelinsky, S. Krapivin.** Jour. Russ. Phys.-chem. Soc. 28, 414–416, (1896).
On the electrolytic condition of some salts and some acids in methyl-alcohol. [This is a report of **2028.**]
- 2028. N. Zelinsky, S. Krapivin.** Jour. Russ. Phys.-chem. Soc. 28, 579–593, (1896).
On the electrolytic state of solutions of salts and some acids in methyl alcohol. [Same as **2029.**]
T = 25°. κ aq. sub.
- 2029. N. Zelinsky, S. Krapivin.** Zeit. Phys. Chem. 21, 35–52, (1896).
Ueber den elektrolitischen Zustand der Lösungen von Salzen und einiger Säuren in Methylalkohol. [Same as **2028.**]
Meas. Zengelis; see 80.
- 2030. T. Zincke.** Ann. Chemie. 296, 135–158, (1897). *Meas. F. Küster.*
Ueber die Einwirkung von Chlor auf o-Amidophenole und o-Diamine. [Same as **1028.**]
- 2031. L. Żlobicki.** Bul. Acad. Cracov. (1907), 1009–1016.
Ueber den Einfluss des Radiums auf die elektrolitische Leitfähigkeit kolloidaler Lösungen. [The organic solvents used were not chemically pure.]
T = 18° to 24°. R. O.

2032. L. Zoja. Zeit. Chem. Ind. Kolloid. 3, 249-269, (1908).
Physikalisch-chemische Untersuchungen der Reaktionen zwischen Eiereiweiss
und Essigsäure.

T = 16°, 25° and 42°.

A. Zoso see P. B. DaMonte.

SUBJECT INDEX.

In using this index, it is advisable to look through all the headings and consider the definitions and illustrations given, since no two persons would agree on exactly the same arrangement.

In cases of doubt, and in cases open to legitimate difference of opinion, the reference is given under all the possible headings.

For the sake of brevity, consecutive references to the same author are sometimes given inclusively, thus 1-4, instead of giving each number separately. These inclusions are never used if the numbers cover more than one name.

When the same measurements are published in more than one journal, the key number given here is to the most accessible article. In the author list, after the title of this article, are given references to the less accessible articles.

SUBJECT INDEX.

ACIDS AND THEIR SALTS.

Carboxylic; as acetic and benzoic acids. Non-carboxylic; as hydrocyanic, ferrocyanic, thiocyanic; and barbituric, croconic and uric acids.

a) No substituting group.

$C_nH_nO_n$.

1, 3, 7, 10, 11, 23, 26, 30, 43, 44, 45, 52, 60, 61, 62, 63, 65, 66, 67, 68, 69, 70, 71, 72, 76, 81, 93, 94, 105, 114, 139, 141, 145, 145a, 145b, 147a, 157, 157a, 164, 165, 168, 169, 170, 171, 172, 175, 177, 179a, 180, 188, 189, 190, 191, 196, 197, 198, 200, 201, 202, 211, 216, 220, 222, 223, 229, 231, 232, (233), 234, 235, 236, 237, 238, 244, 246, 247, 270, 274, 275, 278, 279, 280, 289, 290, 294, 295, 299, 319, 347, 354, 360, 362, 366, 370, 372, 375, 377, 378, 379, 381, 385, 386, 387, 388a, 389, 391, 397, 399, 401, 403, 408, 413, 420, 427, 430, 438, 440, 444, 449, 454, 461, 463, 466, 469, 482, 491, 494, 495, 496, 502, 503, 507, 508, 513, 515, 517, 532, 540, 542, 556, 557, 558, 559, 565, 566, 567, 568, 569, 570, 571, 571a, 572, 573, 579, 588, 591, 601, 602, 606, 619, 635, 637, 640, 642, 646, 647, 656, 682, 691, 693, 694, 698, 699, 701, 738, 750, 753, 754, 768, 782, 787, 788, 789, 793, 796, 799, 804, 810, 813, 814, 817, 823, 826, 827, 828, 838, 848, 860, 861, 865, 875, 881a, 889, 894, 908, 910, 911, 924, 926, 931, 932, 934, 935, 943, 945, 951, 955, 958, 965, 966, 966, 991, 993, 995, 997, 1003, 1004, 1011, 1017, 1018, 1023, 1029, 1030, 1031, 1033, 1043, 1047, 1066, 1078, 1086, 1088, 1094, 1102, 1103, 1104, 1105, 1111, 1122, 1123, 1126, 1138, 1143, 1144, 1160, 1174, 1178, 1184, 1185, 1186, 1199, 1202, 1209, 1211, 1212, 1213, 1217, 1223, 1227, 1229a, 1231, 1240, 1245, 1246, 1248, 1261, 1264, 1270, 1273, 1275, 1279, 1280, 1330, 1331, 1332, 1335, 1338, 1341, 1341b, 1343, 1349, 1350, 1357-1362, 1367, 1368, 1368a, 1369, 1370, 1371, 1372, 1373, 1380, 1386, 1386b, 1387, 1388, 1390, 1391a, 1398, 1399, 1407, 1410, 1411, 1412, 1413, 1414, 1416, 1418, 1419, 1427, 1429, 1448, 1450, 1470, 1473, 1480, 1495, 1496, 1500a, 1500b, 1503, 1518, 1519, 1520, 1533, 1537, 1539, 1543, 1544, 1545, 1546, 1547, 1554, 1562, 1563, 1569, 1573a, 1575, 1577, 1579, 1581, 1581a, 1588, 1590a, 1597, 1618a, 1620, 1630, 1635, 1636, 1638, 1639b, 1640, 1643, 1645, 1649, 1654, 1661, 1662, 1664, 1665, 1666, 1667, 1673, 1684, 1704, 1708, 1708a, 1711, 1712, 1717, 1718, 1728, 1729b, 1735, 1736, 1737, 1741, 1745, 1747, 1781, 1791, 1801, 1807, 1809, 1810, 1813, 1820, 1821, 1823, 1824, 1831, 1834, 1836, 1837, 1838, 1839, 1840, 1842, 1843, 1844, 1853c, 1859, 1860, 1861, 1862, 1865, 1866, 1867, 1888, 1889, 1897, 1899, 1907, 1909, 1911, 1912, 1934, 1936, 1941, 1953a, 1954, 1956, 1957, 1962, 1968, 1969a, 1969, 1971, 1974, 1975, 1976, 1991, 1993, 1994, 2002, 2008, 2016-2018, 2021, 2023, 2024, 2026, 2029.

$C_nH_nN_n$; as hydrocyanic acid; and $C_nH_nO_nN_n$; as pyridine carboxylic acid, cyanic acid and uric acid.

18, 23, 70, 77, 80, 142, 143, 145b, 175, 216, 223, 246, 315, 369, 443, 447, 448, 499, 510, 527, 552, 601, 604, 608, 607, 610, 631, 637, 683, 684, 695, 696, 701, 733, 742, 752, 756, 764, 767, 768, 782, 825, 841, 865, 907, 943, 963, 967, 1043, 1066, 1092, 1094, 1097, 1106, 1150, 1156, 1177, 1186, 1188, 1190, 1245, 1267, 1309a, 1353a, 1369, 1372, 1397a, 1422, 1428, 1461, 1645, 1646, 1654, 1747, 1748, 1814, 1840, 1843, 1853c, 1865, 1886, 1894, 1978, 1979, 1984, 1986, 1996.

Metallo-cyanic acids; as ferro- and ferri-cyanic acids.

149, 150, 158, 220, 313, 372, 376, 468, 510, 604, 606, 689, 690, 889, 889, 901, 903, 907, 924, 943, 971, 1024, 1838, 1862, 1434a, 1485, 1494, 1517, 1709, 1832, 1836, 1837, 1953a, 1959.

Thiocyanic.

216, 217, 468, 471, 474, 478, 482, 487, 491, 606, 681, 793, 820, 911, 922, 943, 990, 993, 1004, 1007, 1056, 1057, 1070, 1106, 1162, 1163, 1164, 1192, 1276, 1337, 1362, 1392, 1470, 1526, 1527, 1573, 1641, 1747, 1752, 1826, 1832, 1844, 1855, 1944, 1947, 1948.

b) Amino-, anilino-, imino- etc., including acids with substitution of H in the NH_2 or NH group; as, aminoacetic acid $CH_2(NH_2).CO_2H$, anilino- butyric acid $Et.CH(NHPh).CO_2H$, acetyl-amino-acetic acid $(MeCO)NH.CH_3.CO_2H$.

23, 30, 79, 142, 143, 145a, 145b, 164, 166, 167, 170, 175, 177, 186a, 191, 195, 228, 268, 271, 302a, 316, 350, 414, 439, 443, 456a, 492, 496, 499, 504, 519, 522, 523, 527, 590, 601, 606, 637, 645, 846, 854, 855, 890, 947, 948, 963, 1027, 1029, 1066, 1067, 1134, 1150, 1157, 1158, 1184, 1186, 1227, 1233, 1243, 1245, 1318, 1334, 1353a, 1367, 1368a, 1370, 1371, 1372, 1374, 1397a, 1407, 1508, (1557), 1563, 1590, 1619, 1639b, 1669, 1678, 1682, 1684, 1718, 1720, 1749, 1773, 1774, 1775, 1814, 1817, 1824, 1838, 1840, 1868, 1874, 1913, 1914, 1915, 1968, 1968a, 1978, 1979, 1981, 1984, 1995.

c) Complex.

These complexes, formed (for the most part) by the combination of organic and inorganic compounds, are chiefly of the types established by Werner, Tschugaeff and others. In most cases, only the salts are known.

88, 89, 149, 246, 247, 320a, 320b, 427, 550, 691, 692, 708, 756, 785, 815, 938, 1023, 1050, 1066, 1094, 1095, 1096, 1097, 1162, 1163, 1164, 1192, 1198, 1269, 1385, 1468, 1485, 1487, 1494, 1495, (1514), 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1527, 1530a, 1550, 1572, 1573, 1577, 1581a, 1641, 1648, 1709, 1711, 1721, 1750-1757, 1759, 1760a, 1761.

d) Cyano; as cyanoacetic acid $CH_2(CN).CO_2H$.

226, 294, 295, 647, 698, 699, 754, 768, 943, 1295, 1296, 1370, 1371, 1390, 1820, 1821, 1831, 1897.

e) Halogen; as bromoacetic acid $\text{CH}_2\text{Br.CO}_2\text{H}$.

23, 43, 53, 79, 157, 157a, 175, 220, 223, 270, 291, 294, 295, 297, 335, 336, 347, 370, 371, 372, 404, 441, 443, 449, 460, 461, 474, 475, 492, 515, 541, 553, 577, 584, 602, 606, 647, 654, 656a, 667, 693, 709, 727, 728, 729, 750, 754, 782, 823, 838, 848, 849, 859, 877, 911, 932, 939, 943, 951, 1011, 1018, 1021, 1084, 1094, 1099, 1116, 1134, 1184, 1185, 1186, 1223, 1254, 1263, 1286, 1299, 1317, 1367, 1368, 1368a, 1370, 1371, 1372, 1416, 1435, 1436, 1437, 1439, 1499, 1508, 1563, 1579, 1581, 1638, 1643, 1690, 1691, 1693, 1694, 1696, 1700, 1701, 1717, 1718, 1728, 1748, 1820, 1824, 1827, 1831, 1833, 1834, 1838, 1840, 1841, 1842, 1844, 1866, 1897, 1908, 1909, 1911, 1930, 1957, 1970, 1971, 1972, 1973, 1994, 2004, 2006, 2029, 2030.

f) Hydroxy- with their ethers; as glycollic acid $\text{CH}_2(\text{OH}).\text{CO}_2\text{H}$ and methoxy-acetic acid $\text{CH}_2(\text{OMe}).\text{CO}_2\text{H}$.

11, 23, 30, 45, 64, 70, 93, 94, 145a, 160, 164, 165, 168, 169, 170, 171, 175, 179, 192, 193, 194, 200, 202, 220, 223, 226, 229, 270, 274, 300, 305a, 309, 319, 320a, 320b, 360, 366, 371, 372, 377, 378, 387, 388a, 389, 394, 395, 404, 418, 430, 447, 448, 449, 463, 473, 474, 482, 492, 495, 515, 525, 527, 532, 541, 542, 558, 574, 588, 606, 617, 640, 643, 647, 657, 691, 692, 693, 701, 705, 727, 728, 729, 742, 754, 782, 804, 809, 812, 823, 827, 848, 853, 889, 910, 911, 934, 938, 943, 947, 956a, 966, 1023, 1034, 1055, 1090, 1091, 1094, 1122, 1134, 1182, 1184, 1185, 1186, 1189, 1199, 1202, 1215, 1223, 1231, 1239, 1248, 1249, 1261, 1262, 1275, 1316, 1317, 1345, 1357, 1362, 1365, 1367, 1368, 1368a, 1370, 1371, 1372, 1407, 1411, 1418, 1429, 1454, 1463, 1465, 1466, 1468, 1473, 1475, 1492, 1493, 1495, 1496, 1508, 1518, 1519, 1521, 1542, 1554, 1562, 1563, 1569, 1581, 1589, 1629, 1633, 1635, 1638, 1640, 1643, 1648, 1649, 1670, 1672, 1684, 1704, 1706, 1718, 1719, 1734, 1735, 1736, 1747, 1781, 1820, 1821, 1823, 1824, 1825, 1836, 1838, 1839, 1842, 1859, 1866, 1899, 1906, 1907, 1909, 1911, 1932, 1941, 1963, 1968a, 1969, 1970, 1991, 1992, 1994, 2018, 2025.

g) Nitro and nitroso; as nitrobenzoic acid $\text{NO}_2.\text{C}_6\text{H}_4.\text{CO}_2\text{H}$ and nitroso or oximino-acetic acid $\text{H.C:NOH.CO}_2\text{H}$.

30, 175, 194, 456a, 492, 515, 526, 602, 606, 807, 837, 847, 856, 860a, 754, 766, 768, 772, 844, 845, 849, 911, 943, 950, 1092, 1094, 1185, 1186, 1295, 1296, 1342, 1365, 1366, 1367, 1368a, 1370, 1371, 1390, 1508, 1563, 1581, 1627, 1684, 1718, 1748, 1781, 1820, 1836, 1838, 1840, 1906, 1909, 1932, 1938, 1972, 1973.

h) Acids containing sulphur; as benzene sulphinic acid $\text{Ph.SO}_2\text{H}$, phenol sulphonie acid $\text{HO.C}_6\text{H}_4.\text{HSO}_3$, thioacetic acid Me.COSH . Thiocyanic acid has been given under a separate heading.

18, 23, 54, 70, 143, 149, 157, 175, 186a, 220, 270, 394, 423, 431, 456a, 492, 495, 504, 606, 607, 635, 637, 643, 645, 660a, 731, 754, 768, 774, 781, 782, 818, 850, 851, 852, 853, 854, 856, 949, 950, 959, 972, 976a, 1090, 1111, 1133, 1134, 1345, 1357, 1366, 1367, 1370, 1372, 1385, 1401, 1402, 1465, 1466, 1467, 1508,

1523, 1529, (1557), 1562, 1574, 1630, 1718, 1721, 1748, 1770, 1773, 1774, 1796, 1811, 1836, 1841, 1842-1844, 1909, 1911, 1940, 1968, 1968a, 1981, 1984.

i) Unclassified.

142, 305a, 606, 683, 684, 733, 738, 752, 754, 756, 767, 768, 769, 773, 782, 888, 948, 976c, 1053, 1054, 1094, 1118, 1119, 1120, 1188, 1353a, 1563, 1676a, 1697, 1720, 1748, 1771, 1837, 1996.

ALCOHOLS; as ethyl alcohol Et.OH.

18, 20, 21, 29, 30, 34, 45, 58, 74, 101, 105, 107, 110, 133, 145b, 147a, 263, 289, 290, 301, 305, 322, 335, 337, 338, 343, 344, 347, 361, 362, 366, 385, 391, 392, 418, 425, 433, 438, 445, 455, 456, 478, 491, 512, 532, 580, 582, 597, 606, 637, 647, 656a, 741, 750, 754, 760, 764, 770, 783, 787, 799, 806, 816, 840, 842, 887, 904, 908, 912, 916, 917, 918, 920, 922, 941, 943, 944, 955, 956, 975, 979, 986, 1010, 1021, 1035, 1036, 1051, 1098, 1106, 1107, 1108, 1110, 1150, 1177, 1179, 1180, 1181, 1183, 1189, 1222, 1259b, 1279, 1316, 1344, 1354, 1388, 1390, 1419-1421, 1423a, 1434, 1434a, 1452, 1464a, 1470, 1472, 1497, 1509, 1518, 1534, 1556, 1569, 1579, 1580, 1582, 1589, 1590a, 1592, 1614, 1620, 1627, 1649, 1651, 1695, 1724, 1746, 1763, 1766, 1777, 1791, 1800, 1807, 1815, 1829, 1842-1844, 1849, 1853a, 1884, 1897, 1900, 1903a, 1970, 1971, 1980, 1987, 1994, 2029, 2031.

ALDEHYDES; as acetaldehyde Me.CHO.

16, 58, 78, 502, 512, 517, 523, 529, 532, 533, 538, 606, 607, 637, 643, 663, 741, 750, 784, 941, 943, 959, 961, 962, 1106, 1107, 1388, 1508, 1558, 1569, 1590a, 1654, 1718, 1719, 1741, 1842-1844, 1847, 1853a, 1897.

AMIDES; as acetic acid amide Me.CONH₂.

17, 33, 70, 102, 141, 143, 145, 145a, 149, 211, 214a, 285, 286, 332, 410, 412, 552, 553, 604, 605, 606, 607, 610, 637, 650, 725, 745, 748, 750, 754, 757, 761, 779, 781, 782, 943, 963, 1008, 1051, 1094, 1096, 1097, 1156, 1248, 1289b, 1318, 1371, 1372, 1479, 1506d, 1524, 1526, 1580, 1576, 1646, 1684, 1729, 1741, 1747, 1748, 1791, 1842-1844, 1853b, 1853c, 1864, 1380, 1890, 1894, 1897, 1904, 1944, 1981, 1983, 1984, 1995, 1996, 2011.

ANHYDRIDES AND LACTONES.

1, 3, 7, 202, 211, 223, 350, 414, 443, 523, 579, 606, 701, 733, 741, 750, 754, 854, 890, 1029, 1030, 1031, 1186, 1249, 1262, 1493, 1500a, 1500b, 1544, 1546, 1562, 1590a, 1810, 1823, 1838, 1839, 1840, 1843, 1844, 1975, 1984, 1991, 2018.

ANILIDES etc.; as acetanilide.

538, 606, 637, 1995.

BASES CONTAINING NITROGEN, AND THEIR SALTS.

a) No substituting group; as ethyl amine and aniline.

19, 27, 32, 33, 44, 59, 75, 85, 98a, 102, 103, 145a, 145b, 165, 169, 177, 186, 269, 270, 271, 285, 286, 299a, 303, 304, 305, 314, 335, 336, 347, 350, 393, 401, 402, 405, 409, 420, 425, 426, 428, 434, 435, 439, 478, 485, 492, 504, 510, 511, 513, 520, 532, 543, 584, 593, 599, 605, 606, 610, 637, 645, (649), 650, 660, 664, 705, 734, 740, 741, 747, 748, 750, 753, 754, 759, 763, 764, 767a, 770, 776, 779, 786, 817a, 822a, 833, 882, 923, 935, 936, 943, 977, 979, 1011, 1057, 1075, 1084, 1093, 1106, 1116, 1143, 1144, 1150, 1175, 1176, 1223, 1224, 1237, 1241, 1256, 1265, 1266, 1283, 1293, 1316, 1321, 1327, 1332, 1354, 1363, 1364, 1388, 1389, 1391, 1402, 1423a, 1472, 1476, 1477, 1481, 1531, 1552a, 1553, 1562, 1569, 1571, 1576, 1578, 1590a, 1601, 1611, 1612, 1614, 1616, 1617, 1631, 1645, 1646, 1659, 1660, 1707, 1729b, 1731, 1755, 1760a, 1770, 1775, 1776, 1777, 1778, 1779, 1791, 1796, 1798, 1801, 1802, 1823, 1828, 1829, 1833, 1834, 1842, 1844, 1846-1849, 1851, 1853a, 1855, 1864, 1880, 1882, 1884, 1897, 1900, 1903, 1903a, 1995, 1997, 2006, 2014, 2029.

b) Alkaloids; as brucine.

98a, 145b, 177, 270, 271, 303, 304, 425, 426, 593, 606, 650, 705, 763, 764, 776, 943, 948, 979, 1106, 1223, 1224, 1241, 1233, 1306, 1611, 1620, 1631, 1646, 1707, 1775, 1776, 1778, 1779, 1842, 1864, 1897, 1978, 1995, 1997, 2014.

c) Complex; or in complex compounds.

59, 149, 510, 511, 520, 550, 815, 886, 943, 1008, 1076, 1384, 1415, 1417, 1481, 1482, 1522, 1530, 1572, 1750-1757, 1759, 1760a, 1761, 1762, 1946-1949.

d) Halogen; as bromoaniline.

270, 271, 428, 492, 543, 584, 606, 660, 1293, 1601, 1697, 1698, 1777, 1864.

e) Nitro and nitroso; as nitroaniline $\text{NO}_2\text{C}_6\text{H}_4\text{NH}_2$ and nitroso-methylaniline $\text{NO.C}_6\text{H}_4\text{NHMe}$.

102, 492, 548, 583, 604, 606, 610, 637, 659, 660a, 733, 736, 754, 757, 782, 1094, 1116, 1802, 1843, 1844, 1853c, 1864, 1897, 1995.

f) Containing sulphur; as thiourea.

149, 177, 271, 350, 748, 943, 1008, 1302, 1363, 1402, 1524, 1526, 1549, 1743, 1826, 1864, 1880.

g) Unclassified.

501, 548, 733, 943, 1083, 1093, 1266, 1601, 1660, 1687, 1707, 1777, 1995, 1997.

CARBOHYDRATES.

45, 145b, 210a, 254, 256, 260a, 322, 324, 392, 532, 588, 590, 593, 594, 595, 606, 637, 641, 686, 741, 783a, 1035, 1036, 1039, 1108, 1110, 1160, 1177, 1209a, 1220, 1222, 1354, 1381, 1383, 1468, 1478, 1497, 1569, 1746, 1747, 1843, 1983.

DIAZO-COMPOUNDS.

77, 142, 143, 318, 425, 500, 501, 531, 635, 730, 731, 735, 736, 737, 755, 774, 779, 1601, 1720.

DILUTION LAW.

15, 84, 478, 483, 485, 488, 647, 837, 989, 994, 1045, 1100, 1300, 1386a, 1483, 1538, 1650, 1675, 1863, 1918, 1940.

DYES.

The references indexed here include both conductivity and all other measurements.

75, 85, (87), 146, 186, 186a, 325, 416, 606, (684b), 636, 637, 657, 660, 734, 741, 763, 770, 833, 882, 943, 976a, 976c, 1265, 1266, 1321, 1401, 1402, 1471a, 1476, 1561, 1562, 1568, 1571, 1614, 1616, 1617, 1705a, 1729a, 1730, 1731, 1796, 1798, 2006.

ESTERS.

16, 18, (38), 70, 106, 141, 143, 145a, 145b, 149, 175, 226, 235, 236, 237, 244, 270, 285, 286, 289, 305, 350, 354, 360, 366, 387, 404, 414, 418, 439, 447, 448, 478, 483, 526, 527, 578, 606, 610, 661, 662, 665, 666, 667, 668, 698, 699, 700, 745, 748, 750, 754, 756, 757, 762, 766, 768, 774, 782, 799, 844, 854, 859, 887, 890, 939, 941, 943, 950, 956a, 966, 967, 1051, 1092, 1097, 1106, 1107, 1111, (1114), 1188, 1223, 1233, 1245, 1295, 1296, 1298, 1311, 1356, 1366, 1371, 1372, 1388, 1390, 1397a, 1428, 1470, 1523, 1530, 1569, 1588, 1590, 1594, 1646, 1656, 1657, 1660, 1665, 1684, 1775, 1777, 1779, 1814, 1815, (1818), 1823, 1829, 1830, 1831, 1834, 1838, 1842-1844, 1846, 1847, 1849, 1853a, 1853, 1859, 1860, 1864, 1879, 1888, 1889, 1897, 1907, 1909, 1914, 1915, 1930, 1932, 1934, 1936, 1938, 1941.

ETHERS; of alcohols, as ethyl ether Et.O.Et; and of phenols, as anisidine $\text{NH}_2\text{C}_6\text{H}_4\text{OMe}$.

33, 45, 70, 133, 273, 305, 360, 362, 366, 501, 531, 534, 535, 536, 548, 606, 807, 643, 735, 746, 750, 760, 816, 887, 943, 986, 1010, 1051, 1098, 1316, 1844, 1421, 1445, 1447, 1508, 1556, 1569, 1596, 1601, 1646, 1718, 1777, 1805, 1842-1844, 1847, 1857, 1893, 1897, 2031.

FLAMES.

Conductivity of flames containing organic compounds.

682.

FLUORESCENCE.

Effect of fluorescence on conductivity.

325, 833, 859a, 1321, 1471a, 1476.

GUMS, OILS, RESINS, WAXES etc.

111, 124, 131, 145b, 606, 931, 1010, 1471, 1491.

HALOGEN DERIVATIVES OF ACIDS; as acetyl chloride.

1842-1844, 1893, 1897.

HYDROCARBONS.

a) No substituting group.

105, 107, 133, 147a, 181, 182, 211, 263, 273, 301, 305, 383, 384, 386, 417, 500, 606, 637, 669, 671, 672, 673, 842, 859a, 872, 873, 873a, 895, 902, 935, 936, 941, 943, 978, 983a, 1010, 1021, 1098, 1223, 1234, 1314, 1344, 1888, 1491, 1556, 1569, 1604, 1605, 1829, 1830, 1842, 1883, 1893, 1897, 2031.

b) Halogen; as chlorobenzene and ethyl iodide.

27, 73, 211, 291, 305, 334, 386, 534, 604, 606, 637, 668, 669, 740, 767a, 775, 780, 796, 840, 872, 943, 1223, 1250, 1329, 1388, 1437, 1464, 1477, 1569, 1676, 1733, 1829, 1830, 1842, 1893, 1897.

c) Nitro; as nitrobenzene.

105, 149, 291, 517, 604, 606, 607, 610, 637, 683, 684, 752, 754, 771, 772, 775, 780, 782, 795, 796, 844, 923, 941, 1092, 1094, 1106, 1107, 1223, 1388, 1423a, 1425, 1464, 1553, 1569, 1590a, 1646, 1686, 1843, 1844, 1853a, 1897.

d) Containing sulphur; as thiophene.

1388, 1897.

IMIDES; as succinimide.

149, 318, 606, 607, 610, 637, 754, 781, 963, 1029, 1032, 1085, 1094, 1095, 1096, 1097, 1143, 1750, 1752, 1755, 1773, 1838, 1996.

INDICATORS; as phenolphthalein.

57, 70, 186, 268, 278, 299, 325, 332, 473, 496, 524, 532, 560, 590, 593, 594, 595, 606, 618, 637, 724, 733, 746, 750, 803a, 818, 822, 833, 847, 882, 936, 943, 950, 1116, 1143, 1144, 1150, 1160, 1230, 1250, 1251, (1259a), 1260, 1265, 1266, 1275, 1321, (1332a), 1381, 1402, 1471a, 1476, 1506, 1559, 1560-1564, 1643, 1705, 1705a, 1729a, 1770, 1777, 1782, 1796, 1798, 1842, 1897, 1916, 1984.

IONIZATION CONSTANT.

I. Constant of second H and OH ion in polybasic acids and bases.

173, 370, 1231, 1335, 1838, 1745, 1775-1779, 1866, 1911, 1913, 1917.

II. Ionization constant of water.

46, 269, 819, 822, 949, 999, 1043, 1115, 1129, 1144, 1259, 1315, 1341, 1376, 1777.

III. Measurements of the ionization constant by methods other than by the electrical conductivity of a dilute solution of the acid or the base. Most of these are measurements of the hydrolysis of salts. They are classified by the method used.

a) Absorption of ammonia and of carbon dioxide.

139, 302, 302a, 561, 925.

b) Elevation of the boiling-point.

292, (892), (893), 917, (1049), 1987.

c) Catalysis and saponification.

16, 17, 19, 48, 177, 272, 350, 392, 409, 414, 423, (598), (651), 661, 662, 665, 666, 724, 738, 752, 354, 855, 855a, 890, 1043, 1141, 1143, 1150, (1300), 1354, (1590), 1594, 1691, 1707, 1864, 1890, 1995, 1996, 1997.

d) Colorimetric.

74, 98a, 214a, 274, 278, 439, 496, 804, 822, 950, 951, 1051, 1061-1069, 1143, 1230, 1345, 1506, 1562, 1563, 1614, 1616, 1617, 1643, 1663, 1665, 1729a, 1729b, 1730, 1773-1779, 1781, (1782), 1916.

e) Electrical conductivity of salts.

177, 269, 270, 271, 350, 370, 409, 435, 436, 439, 532, 664, 1086, 1143, 1150a, 1233, 1293, 1590, 1656-1660, 1984, 2009.

f) Depression of the freezing-point.

58, 177, 185, 292, 297, 408, 461, 512, 528, 529, 658, 683, (751), (893), (919), 1802, 1972, 1973, 1983, 2011.

g) General and unclassified.

272, 295, 410, 412, 435, 524, 658, 693, 925, 1177, (1309), 1656-1660, 1718, 1779, 1827, 2002, 2009, 2011.

h) H ion concentration by measurement of electromotive force.

177, 343, 434.

i) Optical rotation.

768, 859, 1036, 1631, 1637, 1745, 1866, 1880, 1890, 2009, 2011.

j) Partition.

370, 545, 548, 583, 584, 890, 1231, 1820, 1866.

k) Solubility.

428, 659, 660, 890, 957, 1116, 1997.

KETONES; as acetone and benzophenone.

27, 45, 59, 74, 147a, 305, 334, 336, 347, 362, 387, 383, 475, 478, 487, 547, 606, 637, 669, 698, 752, 754, 756, 790, 782, 799, 844, 887, 904, 916, 918, 920, 922, 941, 943, 1035, 1051, 1056, 1070, 1092, 1106, 1137, 1141, 1143, 1296, 1298, 1323, 1386, 1388, 1423a, 1477, 1535, 1553, 1569, 1588, 1590a, 1620, 1646, 1663, 1665, 1676, 1748, 1763, 1890, 1842-1844, 1847, 1853a, 1897, 1904.

LIGHT.

Influence of light on conductivity.

176, 276, 325, 373, 374, 416, 471, 833, 1225b, 1225c, 1226, 1321, 1322, 1324, 1471a, 1476.

MAGNETIC FIELD.

Influence of magnetic field on conductivity.

180.

MOLTEN SALTS.

(40), (41), (42), (55), 100, 110, (156), (159), (221), (589), (674), (675), (676), (679), (711-723), 977, 983a, 1055, (1127), (1128), (1128a) (1130-1132), 1176, 1488, 1578, 1711, (1835), 1894.

NEUTRALIZATION.

This includes the measurement of the effect on electrical conductivity, of the addition of an acid to a base or *vice versa*.

165, 168, 169, 170, 171, 172, (173), 294, 295, 299, 299a, 406, 454, 463, (475a), 476, 477, 494, 495, 499, 512, 522, 523, 524, 528, 532, 553, 975, 1017, 1035, 1227, 1228, 1250, 1251, (1271), 1401, 1508, (1549), (1591), 1636, 1716, 1717, 1718, 1719, 1858.

NITRILES.

33, 70, 482, 517, 531, 606, 610, 669, 683, 684, 698, 735, 763, 769, 779, 943, 1050, 1084, 1106, 1107, 1323, 1388, 1423a, 1569, 1588, 1590a, 1646, 1733, 1842-1845, 1847, 1849, 1853a, 1864, 1890, 1897, 1995.

OXIMES.

70, 175, 547, (599), 604, 606, 635, 637, 683, 733, 752, 754, 758, 768, 782, 865, 1150, 1188, 1190, 1748, 1843, 1844, 1995.

PHENOLS and their ethers and salts; as phenol Ph.OH, anisole Ph.OMe and sodium phenolate Ph.ONa.

27, 29, 70, 105, 147a, 165, 168, 169, 297, 299, 302, 302a, 402, 449, 480, 492, 495, 501, 512, 524, 531, 546, 547, 548, 577, 602, 604, 606, 607, 609, 614, 637, 643, 654, 655, 658, 661, 690, 729, 733, 735, 744, 746, 750, 753, 754, 755, 756, 777, 782, 789, 810,

847, 911, 941, 943, 976a, 976c, 1017, 1042, 1043, 1071, 1116, 1144, 1150, 1150a, 1184, 1230, 1250, 1251, 1362, 1366, 1437, 1488, 1508, 1536, 1562, 1569, 1579, 1590, 1588, 1601, 1620, 1718, 1719, 1747, 1748, 1777, 1796, 1797, 1798, 1802, 1816, 1823, 1827, 1836, 1842, 1865, 1893, 1897, 1916.

PHENYLHYDRAZONES; as nitro-acetaldehyde phenylhydrazone.

78, 82, 175, 546, 926.

PRESSURE.

Effect of pressure on conductivity.

(219), 220, 542, (576), (984), (1020), (1152), (1153), (1154), 1427, 1472, 1509, (1510), 1590a, 1708, 1708a, (1710).

QUINONES; as benzoquinone and croconic acid.

389, 524, 546, 547, 577, 606, 637, 729, 758, 1050, 1275, 1562.

RADIO-ACTIVITY, X- RAYS ETC.

Effect on conductivity.

148, 154, (155), 215, 416, 417, 687, 834, 872, 873, 874, 1476, 1491, (1511), 1551, 1722, 1805, 2031.

SALTS.

a) Of acids.

10, 11, 18, 43, 45, 54, 66, 70, 93, 94, 142, 143, 145a, 145b, 149, 150, 158, 160, 164, 165, 166, 167, 168, 169, 170, 171, 172, 179, 186a, 191, 194, 216, 217, 220, 222, 223, 228, 228, 246, 247, 270, 275, 289, 294, 299, 313, 315, 319, 320a, 320b, 335, 366, 370, 372, 376, 377, 378, 379, 381, 388, 388a, 389, 391, 394, 414, 418, 423, 427, 430, 438, 443, 447, 448, 449, 454, 456a, 463, 466, 468, 469, 471, 474, 478, 482, 487, 491, 494, 495, 502, 510, 513, 515, 523, 525, 526, 532, 540, 542, 552, 556, 558, 565, 588, 571, 573, 588, 590, 601, 604, 606, 607, 610, 617, 635, 637, 642, 643, 645, 647, 658, 660a, 681, 682, 689, 690, 696, 699, 701, 705, 729, 731, 738, 742, 752, 753, 756, 764, 766, 769, 772, 773, 774, 781, 793, 796, 810, 820, 823, 825, 839, 841, 844, 848, 859, 865, 875, 881a, 889, 890, 901, 903, 907, 908, 911, 922, 924, 931, 932, 935, 943, 945, 947, 948, 949, 955, 958, 959, 963, 971, 976c, 990, 991, 993, 995, 997, 1003, 1004, 1007, 1011, 1023, 1024, 1047, 1053, 1054, 1056, 1057, 1066, 1070, 1078, 1084, 1086, 1087, 1088, 1090, 1091, 1094, 1097, 1106, 1111, 1118, 1126, 1134, 1143, 1144, 1156, 1162, 1163, 1164, 1174, 1188, 1190, 1192, 1199, 1209, 1213, 1215, 1227, 1229a, 1273, 1275, 1276, 1279, 1280, 1295, 1296, 1309a, 1331, 1332, 1337, 1338, 1341, 1341b, 1343, 1366, 1367, 1368a, 1369, 1386, 1386b, 1388, 1390, 1392, 1398, 1402, 1416, 1427, 1434a, 1437, 1439, 1461, 1466, 1468, 1470, 1480, 1485, 1492, 1493, 1494, 1496, 1506a, 1508, 1515, 1516, 1517, 1519, 1526, 1527, 1537, 1539, 1546, 1550, 1569, 1573, 1573a, 1577, 1581, 1589, 1618a, 1620, 1633, 1640, 1641, 1645, 1648, 1654, 1690, 1693, 1694, 1696, 1700, 1701, 1709, 1711,

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b) Of bases.

32, 33, 44, 85, 145a, 145b, 165, 186, 269, 270, 271, 286, 299a, 304, 314, 335, 336, 350, 401, 402, 405, 428, 434, 435, 439, 485, 513, 532, 590, 599, 606, 610, 650, 660a, 734, 738, 740, 741, 747, 753, 759, 763, 764, 767a, 770, 822a, 882, 923, 943, 948, 956a, 1011, 1075, 1083, 1086, 1093, 1143, 1144, 1224, 1237, 1256, 1265, 1266, 1293, 1327, 1388, 1402, 1423a, 1531, 1552a, 1571, 1578, 1590a, 1601, 1611, 1648, 1659, 1690, 1697, 1698, 1731, 1775-1779, 1791, 1801, 1802, 1826, 1823, 1829, 1833, 1834, 1842, 1844, 1846-1849, 1851, 1853a, 1855, 1864, 1884, 1903, 1903a, 1984, 2006, 2029.

c) Complex salts and salts of complex compounds. Salts both of acids and of bases are given here, and complexes as of aluminum bromide with benzene.

59, 88, 89, 149, 246, 247, 320a, 320b, 427, 511, 520, 550, (688), 691, 692, 708, 756, 785, 815, 836, 938, 1008, 1023, 1050, 1076, 1086, 1094, 1095, 1096, 1097, 1162, 1163, 1164, 1192, 1198, 1269, 1314, 1379, 1384, 1385, 1415, 1417, 1435, 1436, 1437, 1445, 1446, 1447, 1463, 1481, 1482, 1485, 1487, 1494, 1495, (1514), 1515, 1516, 1517, 1518, 1519, 1520, 1521, 1522, 1524, 1526, 1527, 1528, 1530, 1530a, 1550, 1572, 1573, 1577, 1581a, 1641, 1648, 1709, 1711, 1750-1757, 1759, 1760a, 1761, 1762, 1944, 1946-1949.

SOLUBILITY.

This includes only *electrical* measurements of solubility. Measurements of the conductivity of difficultly soluble compounds are also given.

10, 216, 217, 469, (630), 656, 848, 990, 991, 993, 1003, 1004, 1174, (1331), 1496.

Measurements of conductivity in

SOLVENTS OTHER THAN WATER.

a) Inorganic solvents.

16, 27, 29, 30, 32, 33, 147a, 157, 157a, 222, 223, 297, 315, (393), 470, 471, 472, 485, 602, 604, 606, 807, 509, 610, 650, 669, 671, 672, 673, (706), 750, 887, 943, (974), (1079), (1204), (1205), 1233a, 1237, (1348), (1445), 1446, (1595), 1645, 1646, 1676, 1733, 1826, 1827, 1828, 1829, 1833, 1834, 1842, (1853c), 1855, 1897, (1945).

b) Organic solvents. — Not diluted.

16, 18, 20, (34), (38), 73, 75, 82, (90), 122, (147), (223), 289, 290, 291, (291a), (293), 321, 325, (327), 334, 335, 336, (337), 338, 339, 344, 346, (347), 360, (361), (362), (363), (364), (365),

366, 369, (385), (390), 418, 425, 431, (433), 438, 470, 471, 472, 474, 475, 478, 480, (481), 482, 483, 487, 488, 491, (520), (580), 605, 637, 647, 654, 656a, 667, 668, 669, (697), (711-723), 740, 746, 753, 754, 764, 767a, 782, (783), 787, 788, 789, (817a), 833, 840, (842), (904), 908, (912), (915), (916), (918), (920), 922, 923, 931, 932, (933), 934, 935, 936, 939, (941), (942), 943, 958, 1012, 1013, (1015), 1021, 1022, (1025), (1026), (1044), (1051), 1056, 1057, 1070, 1071, 1084, 1106, 1223, 1250, (1255), 1263, (1278), 1280, (1308), 1311, 1314, 1316, 1321, (1323), (1324), 1329, 1379, 1386b, 1388, (1389), 1390, 1421, 1423a, (1432), 1434a, 1435, 1437, 1444a, (1445), (1469), 1470, (1477), (1488), 1506d, 1526, 1530, (1534), 1552a, 1569, 1579, 1580, 1589, 1590a, (1592), (1609a), (1612), 1620, 1622-1626, (1651), 1654, 1712, 1724, 1733, 1746, 1759, 1763, (1764), (1766), (1794), 1797, 1801, 1802, 1807, 1809, 1815, (1818), 1827, 1830, 1834, 1842, 1843, 1844, (1845), 1846, 1847, 1848, 1849, 1851, 1853a, (1853c), 1854, (1893), 1894, 1900, 1903a, 1904, 1970, 1971, (1987), 1991, (1993), 2008, 2029, (2031).

c) Organic solvents. — Diluted with water.

16, 45, 82, 94, 223, (331), 344, 391, 513, 532, 647, 656a, 754, 764, 777, 782, 822, (876), 908, (912), (915), (916), (918), (920), 922, 923, 926, 932, 1066, 1071, 1185, (1221), 1279, 1280, 1286, 1298, 1316, 1390, 1419, 1452, 1464, (1488), 1508, (1541), 1579, (1582), (1609a), 1627, 1649, (1653), 1654, (1681), 1718, 1724, 1746, 1763, 1791, 1820, 1841, 1884, 1886, (1916), 1994.

SPECIFIC CONDUCTIVITY OF PURE COMPOUNDS.

a) Acids.

44, 211, 347, 360, 362, 369, 517, 631, 694, 753, 787, 894, 908, 943, 966, 1330, 1390, 1388, 1419, 1470, 1575, 1843, 1844, 1853c, 1957, 2008.

b) Alcohols.

18, 20, 21, 263, 289, 290, 305, 335, 337, 338, 347, 361, 362, 366, 391, 418, 425, 438, 455, 456, 478, 491, 590, 597, 647, 656a, 754, 764, 783, 787, 842, 904, 908, 912, 916, 917, 918, 920, 922, 941, 955, 956, 986, 1010, 1021, 1106, 1107, 1316, 1344, 1388, 1390, 1419, 1420, 1421, 1423a, 1434a, 1470, 1472, 1534, 1556, 1569, 1579, 1590, 1589, 1590a, 1592, 1620, 1649, 1651, 1724, 1746, 1766, 1791, 1800, 1807, 1843, 1844, 1849, 1853a, 1884, 1900, 1903a, 1970, 1971, 1987, 2029, 2031.

c) Aldehydes.

517, 784, 941, 1106, 1107, 1388, 1569, 1590a, 1842-1844, 1847, 1853a.

d) Amides.

211, 1506d, 1843, 1844, 1853b, 1853c, 1894.

e) Anhydrides.

211, 1590a, 1843, 1844.

f) Bases — containing nitrogen.

211, 305, 347, 393, 478, 605, 754, 786, 817a, 942, 943, 1057, 1084, 1106, 1176, 1250, 1316, 1388, 1389, 1472, 1477, 1569, 1612, 1843, 1844, 1853c, 1900.

g) Esters.

305, 360, 366, 939, 941, 1106, 1107, 1223, 1388, 1470, 1569, 1830, 1834, 1843, 1844, 1847, 1853a.

h) Ethers.

305, 360, 362, 366, 534, 535, 816, 986, 1010, 1098, 1316, 1344, 1421, 1556, 1569, 1596, 1842-1844, 2031.

i) Halogen derivatives of acids; as acetyl chloride.

1842, 1843, 1844.

j) Hydrocarbons.

211, 263, 291, 305, 384, 386, 517, 534, 740, 842, 872, 873a, 923, 935, 941, 978, 983a, 1010, 1098, 1106, 1107, 1234, 1344, 1388, 1423a, 1437, 1477, 1556, 1569, 1590a, 1604, 1605, 1830, 1843, 1844, 2031.

k) Ketones.

305, 334, 336, 347, 362, 475, 478, 487, 904, 916, 918, 920, 922, 941, 1056, 1070, 1106, 1323, 1388, 1423a, 1477, 1569, 1590a, 1620, 1830, 1843, 1844, 1847, 1853a.

l) Nitriles.

367, 369, 482, 517, 669, 1084, 1106, 1107, 1323, 1388, 1423a, 1569, 1590a, 1733, 1842, 1843, 1844, 1845, 1847, 1849, 1853a.

m) Oximes.

1843, 1844.

n) Compounds containing sulphur. This includes CS₂.

263, 301, 305, 384, 386, 417, 872, 939, 1010, 1098, 1106, 1223, 1344, 1388, 1491, 1556, 1805, 1843, 1844, 1846, 1847, 1853a.

o) Unclassified.

28, 211, 369, 1272, 1569.

SULPHUR COMPOUNDS; as mercaptans, sulphides etc.

Sulphinic and sulphonic acids are not given here, but under the head of ACIDS containing sulphur.

149, 263, 270, 301, 305, 334, 335, 336, 350, 369, 384, 386, 417, 431, 604, 606, 752, 760, 872, 939, 943, 1010, 1098, 1223, 1302,

1344, 1363, 1379, 1383, 1437, 1491, 1549, 1556, 1805, 1833, 1842, 1843, 1844, 1853a, 1855, 2029.

TEMPERATURE.

Under this heading are arranged in four groups those references bearing on the effect of temperature on conductivity, or containing measurements of the ionization constant or of conductivity at temperatures other than those generally used. The author list shows, whenever possible, the particular temperatures or the limits of temperature.

a) At or near the critical temperature.

107, 133, 534, 535, 536, 619, (706), (707), (1025), (1026), 1855.

b) General articles.

262, 329, 330, 515, (870), 875, 889, (909), (1152), (1153), (1154), 1177, 1471, 1472, (1565), (1905), 1968.

c) High temperature (above 26°).

(19), 43, 44, 52a, 54, 103, 105, 106, 110, 122, 124, 143, 145a, 145b, 160, 164, 179, 217, 250, 253, 255, 256, 257, 258, 290a, 306, 307, 308, 309, (331), 376a, 388a, 410, 412, 438, 447, 469, 475, 478, 480, (481), 482, 507a, 515, 523, 532, 534, 536, 552, 553, 593, 609, 617a, 619, 625, 655, 695, 701, 733, 764, 776, 787, 789, 807, 808, 859a, 873, 875, (876), 830, 881, (909), 911, 924, 932, 945, 976a, 983a, 993, 1004, (1015), 1024, 1137a, 1143, 1144, 1150, 1183, 1209, 1226, 1227, 1239a, 1259, 1296, 1326, 1331, 1332, 1337, 1338, 1341, 1341b, 1342, 1355a, 1356, 1390, 1391a, 1428, 1434a, 1452, 1462, 1471, 1472, 1488, 1506a, 1506b, 1506c, 1532, 1537, 1570, 1578, 1581, 1590a, 1592, 1596, 1599, 1627, 1654, 1708, (1766), 1796, 1797, 1798, 1800, 1809, 1834, 1843, 1844, 1846, 1853a, 1855, 1880, 1886, 1894, 1953a, 1957, 1968, 1968a, (1969), 1995, 1997, 2002, 2032.

d) Low temperature (below 17°).

27, 29, 30, 32, (43), 82, 88, 103, 105, 106, 110, 122, 124, 141, 143, 145a, 145b, 147a, 158, 164, 165, 167, 168, 177, 179, 220, 250, (293), 301, 315, 325, (331), 347, 360, 361, 369, 370, 387, 425, 438, 445, 451, 456, 461, 478, 480, (481), 482, 485, 500, 501, 502, (512), 513, 515, 524, 528, 532, 540, 541, 542, (580), 581, 582, 597, (599?), 602, 604, 607, 610, 622a, 625, 635, 646, 669, 671, 680, 683, 684, 701, 709, 725, 730, 733, 735, 736, 752, 756, 763, 764, (765), 766, 768, 769, 770, 772, 773, 774, 775, 776, 780, 786, 787, 793, 796, 833, 838, 839, 848, 873, 875, (876), 877, 887, 901, 902, 903, (906), 908, (909), 910, 911, 916, 918, 920, 922, 923, 924, 932, 943, 949, 956a, 975, 993, 1004, (1015), 1018, (1041), 1076, 1092, 1143, 1144, 1150, 1164, (1205), 1222, 1233a, 1259, 1272, 1296, 1309a, 1330, 1338, 1342, 1356, 1415, 1419, 1464, 1468, 1472, 1477, 1482, 1499, 1519, 1520, 1523, 1524, 1553, 1568, 1569, 1575, 1577, 1590, 1590a, 1596, 1612, 1634a, 1646, 1651, 1654,

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1775-1779, 1796, 1807, 1826, 1827, 1828, 1829, 1833, 1842, 1843,
1844, 1845, 1847, 1848, 1849, 1853a, 1853c, 1855, 1887, 1897,
1959, (1961), 1962, 1968, 1968a, 1980, 1986, (1989), 2004, 2006,
2009, 2032.**

THIN LAYERS.

Conductivity of thin layers.

301, 416, 1480.

JOURNAL LIST.

This gives a complete list of all the journals examined.

The journals are arranged in alphabetical order, disregarding particles such as, *and*, *de*, *der*, etc.

After the title of each journal is given the number and date of the last volume examined, with the page number, or division number, if the complete volume has not been examined.

Journals having the title preceded by the sign # (as, # *Annales de*, etc.) are not complete through the year 1910 either because it has been impossible to examine one or more volumes, or because the volume covering the year 1910 has not been issued. A note of the number or of the date of missing volumes is given.

At the end is added a list of the authors of articles in the Journal of the Russian Physico-chemical Society, arranged chronologically, with the page numbers of the articles. This is given because the variations in names, due to different systems of transliteration, make checking of references to this journal slightly difficult.

JOURNAL LIST.

- Abhandlungen der königlichen Gesellschaft der Wissenschaften zu Göttingen.
Math.-Phys. Klasse.
Through N. F., Volume 9, no. 2, (1911).
- Abhandlungen der königlich preussischen Akademie der Wissenschaften.
(Berlin).
Through (1910).
- Abhandlungen der königlich sächsischen Gesellschaft der Wissenschaften.
Mathematisch-physische Classe.
Through Volume 32, page 506, (1910-1911).
- Abhandlungen der mathematisch-physikalischen Classe der königlich bayerischen Akademie der Wissenschaften. (München).
Through Volume 25, no. 10, (1909-1912).
- American Chemical Journal.
Through Volume 44, (1910).
- The American Journal of Physiology.
Through Volume 27, (1910-1911).
- The American Journal of Science.
Through Volume 30, (1910).
- The Analyst.
Through Volume 35, (1910).
- Annaes scientificos da academia polytechnica do Porto. (Coimbra).
Through Volume 5, (1909-1910).
- Annalen der Chemie. (Justus Liebig's).
Through Volume 378, (1910).
- Annalen der Physik.
[This journal is often referred to by the name of the editor, first Poggen-
dorff, then Wiedemann, then Drude. There has been a board of
editors since the year 1909. Before the beginning of the fourth
series the title was, Annalen der Physik und Chemie.]
Through Series 4, Volume 33, (1910).
- Annalen der Physik und Chemie. Ergänzungsband.
Through Volume IX.
- Annales de chimie et de physique.
Through Series 8, Volume 21, (1910).
- # Annales de l'université de Lyon.
Through N. S., Fascicule 29, (1909).
- Annals of the New York Academy of Sciences.
Through Volume 20, (1910).
- Arbeiten aus dem kaiserlichen Gesundheitsamte.
Through Volume 36, (1910-1911).
- Archiv für Anatomie und Physiologie. Physiologische Abteilung.
Through (1910).
- Archiv für die gesammte Physiologie des Menschen und der Tiere. (Pflüger's
Archiv).
Through Volume 135, (1910).

- Archiv der Pharmazie.
Through Volume 248, (1910).
- Archives du Musée Teyler. (Haarlem).
Through Series 2, Volume 11, (1907-1909).
- Archives néerlandaises des sciences exactes et naturelles.
Through Volume 15, (1910).
- Archives des sciences physiques et naturelles. (Bibliothèque universelle).
Through Series 4, Volume 30, (1910).
- Archivio di fisiologia.
Through Volume 8, (1909-1910).
- Arkiv för kemi, mineralogi och geologi.
Through Volume 3, (1908-1910).
- Arkiv för matematik, astronomi och fysik.
Through Volume 6, (1910-1911).
- Atti della accademia Gioenia di scienze naturali in Catania.
Through Series 5, Volume 3, (1910).
- Atti della pontificia accademia romana dei nuovi Lincei.
Through Volume 63, (1910).
- Atti della reale accademia dei Lincei. Memorie. See Memorie della reale accademia, etc.
- Atti della reale accademia dei Lincei. Rendiconti. See Rendiconti della reale accademia, etc.
- * Atti della reale accademia delle scienze fisiche e matematiche. Società reale di Napoli.
Through Series 2, Volume 14, (1909).
- Atti della reale accademia di scienze, lettere e belle arti di Palermo.
Through Volume 9, (1912).
- Atti della reale accademia delle scienze di Torino.
Through Volume 45, (1909-1910).
- Atti del reale istituto veneto di scienze, lettere ed arti.
Through Volume 69, (1909-1910).
- Beiträge zur chemischen Physiologie und Pathologie. Zeitschrift für die gesamte Biochemie.
Through Volume 11, (1908). Publication discontinued.
- Berichte der deutschen chemischen Gesellschaft.
Through Volume 43, (1910).
- Berichte der deutschen physikalischen Gesellschaft see Verhandlungen der deutschen physikalischen Gesellschaft.
Through Volume 8, (1910).
- Berichte der naturforschenden Gesellschaft zu Freiburg.
Through Volume 18, (1909-1910).
- Berichte über die Verhandlungen der königlich sächsischen Gesellschaft der Wissenschaften zu Leipzig. Mathematisch-physische Klasse.
Through Volume 62, (1910).
- Bihang till kongl. svenska vetenskaps-akademiens handlingar. (Stockholm).
Through Volume 28, (1902-1903). Publication discontinued.
- Biochemische Zeitschrift.
Through Volume 28, (1910).
- Bollettino delle sedute della accademia Gioenia di scienze naturali in Catania.
Through N. S., Fasc. 15, (1911).
- Bulletin de l'académie royale des sciences, des lettres et des beaux-arts de Belgique. Bulletins de la classe des sciences. [The volumes are not numbered after the year 1898.]
Through (1910).

- Bulletin of the Chicago Academy of Sciences.
Through Volume 3, no. 5, (1909-19—).
- Bulletin international de l'académie des sciences de Cracovie. Série A; sciences mathématiques. Série B; sciences naturelles.
Through A, (1910).
" B, (1910).
- Bulletin des séances de la société française de physique. [Before 1893 the title was, Séances de la société française de physique.]
Through (1910).
- Bulletin des séances de la société des sciences de Nancy.
Through Series 3, Volume 11, (1910).
- Bulletin de la société chimique de France. [Before 1910 the title was, Bulletin de la société chimique de Paris.]
Through Series 4, Volume 7, (1910).
- Bulletin de la société des sciences de Nancy. [Continued in, Bulletin des séances de la société des sciences de Nancy.]
Through Series 2, Volume 16, (1899).
- Bulletin de la société vaudoise des sciences naturelles. (Lausanne).
Through Series 5, Volume 46, (1910).
- The Chemical News.
Through Volume 102, (1910).
- Chemiker-Zeitung.
Through Volume 34, (1910).
- Comptes rendus hebdomadaires des séances de l'académie des sciences. (Paris).
Through Volume 151, (1910).
- Denkschriften der kaiserlichen Akademie der Wissenschaften. Mathematisch-naturwissenschaftliche Klasse. (Wien).
Through Volume 86, I, (1911).
- Drude's Annalen see Annalen der Physik.
- Ergebnisse der Physiologie.
Through Volume 9, (1910).
- Forhandlinger i Videnskabs-Selskabet i Christiania.
Through (1910).
- Gazzetta chimica italiana.
Through Volume 40, (1910).
- Giornale di scienze naturali ed economiche. (Palermo).
Through Volume 28, (1911).
- Göteborgs kungl. vetenskaps- och vitterhetssamhälles handlingar.
Through Series 4, Volume 13, (1910).
- Helios. Organ des naturwissenschaftlichen Vereins des Regierungsbezirkes. (Frankfurt).
Through Volume 26, (1910).
- Hoppe-Seyler's Zeitschrift see Zeitschrift für physiologische Chemie.
- Isis see Sitzungsberichte und Abhandlungen etc.
- The Journal of the American Chemical Society.
Through Volume 32, (1910).
- The Journal of Biological Chemistry.
Through Volume 8, (1910).
- Journal of the Chemical Society. (London).
Through Volume 97, (1910).
- Journal de chimie physique.
Through Volume 8, (1910).
- The Journal of Industrial and Engineering Chemistry.
Through Volume 2, (1910).

- The Journal of Physical Chemistry.
Through Volume 14, (1910).
- The Journal of Physiology.
Through Volume 40, (1910).
- Journal de physique.
Through Series 4, Volume 9, (1910).
- Journal für praktische Chemie.
Through Series 2, Volume 82, (1910).
- Journal of the Russian Physico-chemical Society.
Through Volume 42, (1910).
See also the end of this section.
- The Journal of the Society of Chemical Industry.
Through Volume 29, (1910).
- The Journal of the Society of Dyers and Colourists.
Through Volume 26, (1910).
- Justus Liebig's Annalen see Annalen der Chemie.
- Kolloidchemische Beihefte see Zeitschrift für Chemie und Industrie der Kolloide.
- Kolloid Zeitschrift see Zeitschrift für Chemie und Industrie der Kolloide.
- Det kongelige danske videnskabernes Selskabs Skrifter.
Through Series 7, Volume 8, (1909-1911).
- Kungliga svenska vetenskapsakademiens handlingar.
Through N. F., Volume 46, (1910-1911).
- Liebig's Annalen see Annalen der Chemie.
- The London, Edinburgh and Dublin Philosophical Magazine see Philosophical Magazine.
- Meddelanden från k. vetenskapsakademiens Nobelinstitut.
Through Volume 1, (1906-1909).
- Mémoires de l'académie nationale des sciences, arts et belles-lettres de Caen.
Through (1910).
- Mémoires de l'académie des sciences, belles-lettres et arts de Lyon.
Through Series 3, Volume 11, (1911).
- Mémoires couronnés et autres mémoires publiés par l'académie royale des sciences, des lettres et des beaux-arts de Belgique. In 8°. Classe des sciences.
Through Series 2, Volume 2, (1907-1910).
- Mémoires de la société royale des sciences de Liège.
Through Series 3, Volume 9, (1912).
- Memoirs of the American Academy of Arts and Sciences.
Through N. S., Volume 13, (1908).
- Memoirs and Proceedings of the Manchester Literary and Philosophical Society.
Through Volume 54, (1909-1910).
- * Memorias de la real academia de ciencias exactas, físicas y naturales de Madrid.
Through Volume 26, (1908).
- Memorie della pontificia accademia romana dei nuovi Lincei.
Through Volume 28, (1910).
- Memorie della reale accademia dei Lincei. Classe di scienze fisiche, matematiche e naturali.
Through Series 5, Volume 7, (1908-1910).
- Memorie della reale accademia delle scienze dell'istituto di Bologna.
Through Series 6, Volume 7, (1909-1910).

- Memorie della reale accademia delle scienze di Torino. Scienze fisiche, matematiche e naturali.
Through Series 2, Volume 60, (1910).
- Memorie della regia accademia di scienze, lettere ed arti in Modena.
Through Series 3, Volume 9, (1910).
- Mitteilungen der naturforschenden Gesellschaft in Bern.
Through (1910).
- Monatshefte für Chemie.
Through Volume 31, (1910).
- Nachrichten von der königl. Gesellschaft der Wissenschaften zu Göttingen. Mathematisch-physikalische Klasse.
Through (1910).
- Nature.
Through Volume 85, (1910-1911).
- Naturwissenschaftliche Rundschau.
Through Volume 25, (1910).
- Nova acta regiae societatis scientiarum upsaliensis.
Through Series 4, Volume 2, (1907-1911).
- Il nuovo cimento.
Through Series 5, Volume 20, (1910).
- Öfversigt af finska vetenskaps-societetens förhandlingar. (Helsingfors).
Through Volume 52, (1909-1910).
- Öfversigt af kongl. vetenskaps-akademiens förhandlingar. (Stockholm).
Through (1901-1902).
- Oversigt over det kongelige danske videnskabernes Selskabs Forhandlingar. (Copenhagen).
Through (1910).
- Pfütger's Archiv see Archiv gesammte Physiologie.
- The London, Edinburgh and Dublin Philosophical Magazine and Journal of Science.
Through Series 6, Volume 20, (1910).
- Philosophical Transactions of the Royal Society of London see Transactions of the Royal etc.
- The Physical Review.
Through Volume 31, (1910).
- Physikalische Zeitschrift.
Through Volume 11, (1910).
- Poggendorff's Annalen see Annalen der Physik.
- Proceedings of the American Academy of Arts and Sciences.
Through Volume 45, (1909-1910).
- Proceedings of the American Association for the Advancement of Science.
Through Volume 61, (1910).
- Proceedings of the American Philosophical Society.
Through Volume 49, (1910).
- Proceedings of the Birmingham Natural History and Philosophical Society.
Through Volume 12, no. 5, (1907-19—).
- Proceedings of the California Academy of Sciences.
Through Series 3, Volume 4, (1905).
- Proceedings of the Cambridge Philosophical Society.
Through Volume 15, (1909-1910).
- Proceedings of the Chemical Society. (London).
Through Volume 26, (1910).

- Proceedings of the Davenport Academy of Sciences. (Davenport, Iowa).
Through Volume 12, (1907-1910).
- Proceedings of the Indiana Academy of Sciences.
Through (1910).
- Proceedings of the Iowa Academy of Sciences.
Through Volume 17, (1910).
- Proceedings of the Physical Society of London.
Through Volume 22, (1910).
- Proceedings of the Royal Dublin Society see Scientific Proceedings of, etc.
- Proceedings of the Royal Irish Academy.
Through Volume 28, (1909-1910).
- Proceedings of the Royal Physical Society. (Edinburgh).
Through Volume 18, (1909-1912).
- Proceedings of the Royal Society of Edinburgh.
Through Volume 30, (1909-1910).
- Proceedings of the Royal Society of London.
Through A, Volume 83, (1909-1910).
" B, Volume 82, " "
- The Proceedings and Transactions of the Nova Scotian Institute of Science.
Through Volume 12, (1907-1909). [Volume 12 contains one paper dated 1911.]
- Proceedings and Transactions of the Royal Society of Canada.
Through Series 3, Volume 4, (1910).
- Proceedings of the Washington Academy of Sciences.
Through Volume 12, (1910).
- Procès-verbaux des séances de la société des sciences physiques et naturelles de Bordeaux.
Through (1909-1910).
- Recueil des travaux chimiques des Pays-Bas et de la Belgique.
Through Volume 29, (1910).
- Rendiconti della reale accademia dei Lincei. Classe di scienze fisiche, matematiche e naturali.
Through Series 5, Volume 19, (1910).
- Rendiconti. Reale istituto lombardo di scienze e lettere.
Through Series 2, Volume 43, (1910).
- * Rendiconti della società chimica di Roma.
Through Volume 6, (1908).
- Rendiconto dell' accademia delle scienze fisiche e matematiche (sezione della società reale di Napoli).
Through Series 3^a, Volume 16, (1910).
- * Rendiconto delle sessioni della reale accademia delle scienze dell'istituto di Bologna.
Through N. S., Volume 14, (1909-1910).
The years 1889 to 1896 inclusive have not been examined.
- Revista de la real academia de ciencias exactas, físicas y naturales de Madrid.
Through Volume 9, (1910-1911).
- Schriften des naturwissenschaftlichen Vereins für Schleswig-Holstein.
Through Volume 15, page 222, (1909-1911).
- Science.
Through N. S., Volume 32, (1910).
- The Scientific Proceedings of the Royal Dublin Society.
Through Volume 12, (1909-1910).
- The Scientific Transactions of the Royal Dublin Society.
Through Series 2, Volume 9, (1905-1907). Publication discontinued.

- Sitzungsberichte und Abhandlungen der naturwissenschaftlichen Gesellschaft
Isis' in Dresden.
Through (1910).
- Sitzungsberichte der Gesellschaft zur Beförderung der gesamten Naturwissen-
schaften. (Marburg).
Through (1910).
- Sitzungsberichte der königlich böhmischen Gesellschaft der Wissenschaften.
Mathematisch-naturwissenschaftliche Classe. (Prag).
Through (1910).
- Sitzungsberichte der königlich preussischen Akademie der Wissenschaften.
(Berlin).
Through (1910).
- Sitzungsberichte der mathematisch-naturwissenschaftlichen Classe der kaiser-
lichen Akademie der Wissenschaften. (Wien).
Through Volume 119, (1910).
- Sitzungsberichte der mathematisch-physikalischen Klasse der königlich bay-
erischen Akademie der Wissenschaften zu München.
Through Volume 40, (1910).
- Sitzungsberichte der physik-med. Gesellschaft zu Würzburg.
Through (1910).
- Transactions of the Academy of Science of St. Louis.
Through Volume 19, (1910).
- Transactions of the American Electrochemical Society.
Through Volume 20, (1911).
- Transactions of the American Philosophical Society.
Through N. S., Volume 21, (1905-1908). [Volume 22 begins with the
year 1911.]
- Transactions of the Cambridge Philosophical Society.
Through Volume 21, (1908-1912).
- Transactions of the Connecticut Academy of Arts and Sciences.
Through Volume 16, (1910).
- Transactions of the Faraday Society.
Through Volume 6, (1910).
- Transactions of the Kansas Academy of Science.
Through Volume 24, (1911).
- Transactions of the New York Academy of Sciences.
Through Volume 16, (1896-1897). Publication discontinued.
- Transactions of the Royal Dublin Society see Scientific Transactions, etc.
- * Transactions of the Royal Scottish Society of Arts.
Through Volume 18, (1908-1909).
- Transactions of the Royal Society of Edinburgh.
Through Volume 47, (1908-1911).
- Philosophical Transactions of the Royal Society of London.
Through Series A, Volume 210, (1910).
" " B, " 201, (1910).
- Transactions of the Texas Academy of Science.
Through Volume 11, (1911).
- * Transactions of the Wisconsin Academy of Sciences, Arts and Letters.
Through Volume 16, (1908-1909).
- * Travaux scientifiques de l'université de Rennes.
Through Volume 6, (1907).
- University Studies. (University of Nebraska).
Through Volume 10, (1910).

- Verhandelingen der koninklijke akademie van wetenschappen. (Amsterdam).
Through Series 2, Volume 11, no. 2, (1910-19—).
- Verhandlungen der deutschen physikalischen Gesellschaft. [This is sometimes bound with the Berichte der deutschen physikalischen Gesellschaft under that title, but with a double title page.]
Through Volume 12, (1910) = Volume 8 of Berichte, etc.
- Verhandlungen der Gesellschaft deutscher Naturforscher und Ärzte.
Through Volume 82, (1910).
- Verhandlungen der naturforschenden Gesellschaft in Basel.
Through Volume 20, (1909-1910).
- Verhandlungen der physikalischen Gesellschaft zu Berlin. [Continued as Verhandlungen der deutschen physikalischen Gesellschaft.]
Through Volume 17, (1898).
- Verslag van de gewone vergaderingen der wis- en natuurkundige afdeling.
Koninklijke akademie van wetenschappen te Amsterdam.
Through Volume 18, (1909-1910).
- Wiedemann's Annalen see Annalen der Physik.
- Zeitschrift für analytische Chemie.
Through Volume 49, (1910).
- Zeitschrift für angewandte Chemie.
Through Volume 23, (1910).
- Zeitschrift für anorganische Chemie.
Through Volume 69, (1910).
- Zeitschrift für Biologie.
Through Volume 54, (1910).
- Zeitschrift für Chemie und Industrie der Kolloide. (Kolloid-Zeitschrift).
Through Volume 7, (1910).
- Kolloidchemische Beihefte.
Through Volume 1, (1909-1910).
- Zeitschrift für Elektrochemie und angewandte physikalische Chemie.
Through Volume 16, (1910).
- Zeitschrift für die gesamte Biochemie see Beiträge zur chemischen Physiologie und Pathologie.
- Zeitschrift für Naturwissenschaften.
Through Volume 82, (1910).
- Zeitschrift für physikalische Chemie.
Through Volume 75, (1910-1911).
- Zeitschrift für physiologische Chemie. (Hoppe-Seyler's).
Through Volume 69, (1910).

Journal of the Russian Physico-chemical Society.
Through Volume 42, (1910).

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- 110-115 Chroustchhoff, Pachkoff.
115-116 Chroustchhoff.
411-430 Kistiakowsky.

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- 126-147 Zelinsky, Besredka.
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(608-611 Zelinsky).
(611-612 Zelinsky). **1894. Vol. 26.**

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242-246 Protopopov, Reformatsky.
545-547 Centnerszwer.
547-549 Centnerszwer. **1901. Vol. 33.**

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651-652 Fëdorov.
794-810 Plotnikow. **1903. Vol. 35.**

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(605 Gardner, Gerassimoff).
(746-753 Gardner, Gerassimoff). **1904. Vol. 36.**

1905. Vol. 37.

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 492-502 Pissarjewsky, Lemcke.
 875-881 Plotnikow.

1906. Vol. 38.

1096-1104 Plotnikow.

1907. Vol. 39.

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 1630-1632 Tanatar, Kurovskij.

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(192-197 Bogorodskij).
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 391-396 Neminskij, Plotnikow.
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 (599-611 Pissarjewsky, Karp).
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 887-908 Doroševskij, Roždestvenskij.
 1238-1243 Plotnikow.
 (1243-1247 Plotnikow).
 (1247-1257 Plotnikow).
 1379-1388 Zelinsky, Isgaryšev.

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(241-244	Timofejev).	} In the Mendelejeff number.
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253-287	Tschugaeff.	
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683-690 Sachanov.
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ADDENDA.

TO AUTHOR LIST.

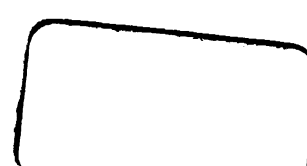
- 1800a.** L. Vignon. Bulletin Société Industrielle Mulhouse. 77, 82-84, (1907).
Teinture etc. [Same as 1799. Same as 1796 for A.]
1800b. L. Vignon. Bulletin Société Industrielle Mulhouse. 79, 133-139, (1909).
Conductibilité électrique etc. [Same as 1798.]
1800c. L. Vignon. Bulletin Société Industrielle Mulhouse. 79, 139-142, (1909).
Sur les propriétés etc. [Same as 1797 and 1800.]
1856a. P. Walden, M. Centnerszwer. Bulletin Académie Impériale Sciences St. Pétersbourg. (5), 15, 17-119, (1901).
Flüssiges Schwefeldioxyd etc. [Same as 1854 and 1855.]

TO JOURNAL LIST.

- The American Journal of Pharmacy.
Through Volume 82, (1910).
Bulletin de l'académie impériale des sciences de St. Pétersbourg.
Through Series 6, Volume 4, (1910).
Bulletin de la société chimique de Belgique.
Through Volume 24, (1910).
Bulletin de la société industrielle de Mulhouse.
Through Volume 70, (1910).
Bulletin de la société industrielle de Rouen.
Through Volume 38, (1910).
Bulletins of the Minnesota Academy of Science.
Through Volume 4, (1892-1910).
Förhandlingar see also Öfversigt etc.
Handlingar see Bihang till kongl. svenska etc., Göteborgs kungl. etc. and Kungliga svenska etc.
Journal of the Academy of Natural Sciences of Philadelphia.
Through Series 2, Volume 14, (1909-1912).
Journal and Proceedings of the Royal Society of New South Wales.
Through Volume 44, (1910).
The Kansas University Quarterly.
Through Volume 10, (1901). Publication continued in the following journal.
The Kansas University Science Bulletin.
Through Volume 5, (1910-1911).
Det kongelige norske videnskapers Selskaps Skrifter.
Through (1910).

- Mémoires de l'académie impériale des sciences de St. Pétersbourg. Classe
des sciences physiques et mathématiques.
Through Series 8, Volume 25, (1910).
- Mémoires de la société des sciences physiques et naturelles de Bordeaux.
Through Series 6, Volume 5, Fasc. 1, (1910-19—).
- Papers and Proceedings of the Royal Society of Tasmania.
Through (1910).
- Précis analytique des travaux de l'académie des sciences, belles-lettres et
arts de Rouen.
Through (1910-1911).
- Proceedings of the Academy of Natural Sciences of Philadelphia.
Through Volume 62, (1910).
- The Proceedings of the Colorado Scientific Society.
Through Volume 9, (1908-1910).
- Proceedings of the Royal Society of Queensland.
Through Volume 22, (1910).
- Proceedings of the Royal Society of Victoria.
Through N. S., Volume 23, (1911).
- Sammelschrift der mathematisch-naturwissenschaftlich-ärztlichen Sektion
der Ševčenko-Gesellschaft der Wissenschaften in Lemberg.
Through Volume 14, (1910).
- Skrifter see Kongelige danske etc. and Kongelige norske, etc.
- Transactions and Proceedings and Report of the Royal Society of South
Australia.
Through Volume 34, (1910).
- Transactions of the Royal Society of Victoria.
Through Volume 5, (1910).
- University of Illinois. The University Studies.
Through Volume 3, (1908-1910).
- University of Missouri Studies. Science Series.
Through Volume 2, No. 2, (1911).
- University Studies. University of Cincinnati.
Through Series 2, Volume 6, (1910).

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